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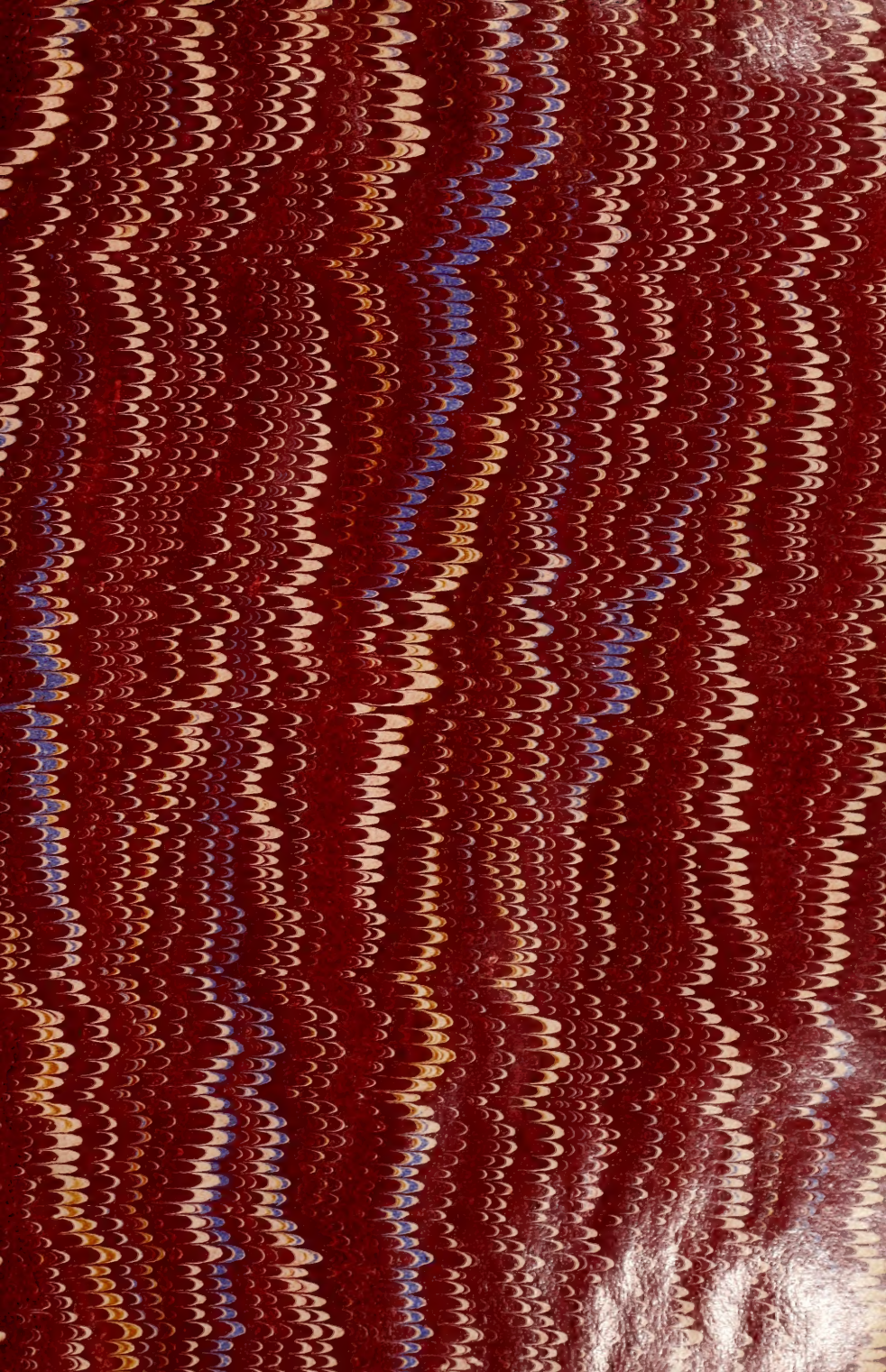

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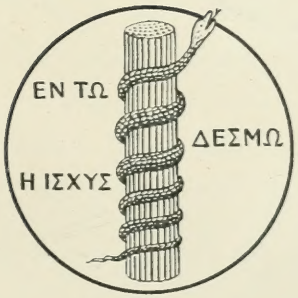
VOL. XI



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MEDICAL EDUCATION IN SCOTLAND.

A CANDIDATE desirous of obtaining a legal qualification to practise medicine must conform to the Regulations of the General Medical Council, which require that (1) the candidate must first pass a preliminary examination; (2) must register as a medical student; (3) must study for at least five years at a school recognised by the General Medical Council; (4) must obtain a degree or diploma recognised by the Council: and (5) must enter his name on the official list of medical practitioners, the *Medical Register*. No person whose name does not appear on the *Medical Register* may legally sign certificates, give medical evidence in Court, or sue for fees.

Provided these Regulations are conformed to, the candidate has a wide choice of medical schools, and may proceed to take either a University degree or a diploma of the other licensing bodies. Those available in Scotland are as follows:—

Degrees.—The Scottish Universities confer the degrees of Bachelor of Medicine and Bachelor of Surgery (M.B., Ch.B.) on candidates who have attained the age of twenty-one. These degrees admit to the *Medical Register*. The higher degrees, Doctor of Medicine (M.D.), Master of Surgery (Ch.M.), may be registered as additional qualifications.

Diplomas.—The Royal College of Physicians of Edinburgh, the Royal College of Surgeons of Edinburgh, and the Royal Faculty of Physicians and Surgeons of Glasgow co-operate in conducting Examinations for the *Triple Qualification* (L.R.C.P.E., L.R.C.S.E., L.R.F.P.S.G.), which admits to the *Medical Register*. Like the higher degrees of the Universities, the Fellowships and Licences of any of these corporations may be registered as additional qualifications.

Special degrees and diplomas are granted to qualified persons in the department of public health.

THE UNIVERSITIES.

PRELIMINARY EXAMINATION.—Each student must pass this examination before commencing medical study. At the matriculation office of each University, candidates can obtain schedules, which must be filled up and lodged not later than certain dates in March and September respectively. The fee for examination is 10s. 6d., and should be paid at the time of lodging the schedule. Candidates are examined on the following subjects:—

1. *English.*—A single three hours' paper will be set, containing an Essay, a Paraphrase, two questions on History, two in Geography, four on Grammar (including Correction of Sentences, Parsing, Analysis of Sentences, and Derivations), two of a literary and general kind. Eight answers will be required. The Essay, the Paraphrase, one answer in History, and one in Geography are compulsory.

2. *Latin.* — Translation, Parsing, Grammar, Prose Composition, and Sentences.

3. *Elementary Mathematics.*—(*a*) Arithmetic (fractions, proportion, percentage, square root, and simple interest): (*b*) Algebra (fractions, factors, square root, equations of the first degree, simultaneous equations of the first degree, quadratic equations and problems leading thereto): (*c*) Geometry (Euclid, Books I., II., and III., or their equivalents, with simple deductions).

4. *Greek, French, German, or Italian.*

French or German.—Grammar, translation into English and into French or German, and short idiomatic sentences for translation from English.

Greek.—Grammar, translation into English, and of short sentences into Greek.

In the case of a candidate whose native language is not English, an examination in the native language of the candidate may be substituted for one in either French or German, and an examination in any other classical language for one in Latin or Greek.

It is compulsory that the subjects be passed at not more than two examinations, but there is no restriction on the number of times the candidate may present himself for examination. A degree in Arts or Science in any University of the United Kingdom, and in any Colonial or Foreign University specially recognised; the Lower Grade Leaving Certificate of the Scottish Education Department, and certain other examinations, are accepted as equivalents for the preliminary examination. The preliminary examination conducted by the Educational Institute of Scotland is not accepted as an equivalent examination.

Matriculation.—Having passed the preliminary examination, the student must, within fifteen days after the commencement of the session, make the required entries in the Matriculation Album of the University, and pay the matriculation fee, which is one guinea for the whole year, half a guinea for the summer session alone. The student must matriculate each year of study.

Registration.—Within fifteen days after commencement of study, he must register as a medical student. He must be not less than sixteen years of age, must have passed the preliminary examination, and must produce to the Registrar (James Robertson, Esq., 54 George Square, Edinburgh) an application form duly filled up, showing that he has commenced medical study.

The Carnegie Trust.—This Trust is prepared to pay the class fees of students (who have passed the specified preliminary examination) for all classes, whether attended within the Universities or in any of the Extra-Mural Schools. The Trust is also prepared to pay the class fees for students proceeding to the Triple Qualification, provided that the applicant has passed the preliminary examination recognised by the Trust. It is also prepared to pay the fees for the various special classes given by many of the Lecturers upon advanced and non-compulsory subjects. Three qualifications are demanded: the applicant (1) must be over sixteen years of age; (2) must be of Scottish birth or extraction, or must have given two years' attendance after the age of fourteen at a school or institution under inspection of the Scottish Education Department; and (3) must be qualified by preliminary examination under the ordinances of the Scottish Universities Commission and the regulations of the Joint Board of Examiners, to attend the classes for which payment of fees has been claimed. Schedules of application for admission to the benefit of the Trust are obtainable by written application to the Secretary of the Trust, 14 Hanover Street, Edinburgh.

UNIVERSITY OF EDINBURGH.

The University of Edinburgh offers many attractions to the student of medicine. The various departments are well equipped for purposes of teaching and research, and there are ample facilities for clinical instruction. The Royal Infirmary, the Royal Hospital for Sick Children, and the Royal Maternity Hospital are in the immediate vicinity of the University, while the Royal Asylum for the Insane, the Fever Hospital, and the various dispensaries can be reached within half an hour.

Students may attend one half of their classes in the Extra-Mural School, and are thus offered a choice of teachers on the different subjects of the curriculum.

An important agreement between the University and the Royal Infirmary has just been reached by which the teaching resources of the latter will be more fully available for University students than hitherto. The agreement provides that all the senior members of the Infirmary staff (those in charge of wards) become University lecturers and examiners, while the assistant physicians and surgeons become University lecturers, and take a share in the clinical teaching. The clinical tutors are also to take a recognised place in University teaching, and their demonstrations are to be held at a morning hour instead of in the evening as hitherto. There can be little doubt that the latter change will give the study of side-room work an enhanced value in the mind of the student.

Further changes which will greatly benefit teaching have been made in the Pathological Department. The Professor of Pathology has been appointed Consultant Pathologist to the Royal Infirmary, while the Pathologist to the Infirmary has been appointed University Lecturer on Morbid Anatomy.

A Chair of Bacteriology has been founded, and Dr. James Ritchie has been appointed its first occupant.

Since, up to the present, Bacteriology has been taught in the Pathological Department, it is probable that arrangements will be made to provide accommodation for the Professor of Bacteriology in the Laboratory of the Royal College of Physicians, of which he is the Superintendent, until a University department is provided.

The social side of student life is provided for in many ways. The University Union, with a membership of 1500, has a fine debating-hall, libraries, reading rooms, billiard rooms, and a catering department.

The Royal Medical Society, founded in 1737, offers the student the advantages of a fine medical library and reading rooms, while in its spacious hall in Melbourne Place many whose names have since become famous have made their first essay in medical debate. The Australasian Club and South African Union are the headquarters of student patriots from these quarters of the world.

The Town and Gown Association provide a number of student residences, which are managed by a committee of the residents.

A full curriculum for women students, recognised by the University, is provided by the Edinburgh School of Medicine at Surgeons' Hall. Women students have their own union, halls of residence, and athletic field (see p. xxv.).

Particulars regarding the curriculum will be found in the University calendar or "medical programme," published by James Thin, 55 South Bridge.

The following order of study is recommended :—

A.—For Students Beginning in Winter.

FIRST YEAR.

Winter—

Practical Chemistry (twice weekly). Anatomy. Chemistry.
Physics. Practical Anatomy (thrice weekly).

Examination in Chemistry and Physics.

Summer—

Botany. Zoology.

Practical Botany } On alternate days. Practical Anatomy.
Practical Zoology }

Examination in Botany and Zoology.

SECOND YEAR.

Winter—

Physiology. Practical Physiology (twice weekly).
Practical Anatomy and Demonstrations.

Summer—

Histology. Practical Anatomy and Demonstrations.
Examination in Anatomy and Physiology.

THIRD YEAR.

Winter—

Practical Materia Medica. Surgery. Clinical Surgery.
Materia Medica. Pathology.

Summer—

Practical Pathology. Post-Mortem Examinations and Hospital Practice. Vaccination.
Examination in Pathology and Materia Medica.

FOURTH YEAR.

Winter—

Medicine. Midwifery and Gynecology. Clinical Medicine.
Dispensary Practice, Practical Midwifery } (January-March).

Summer—

Operative Surgery. Public Health. Diseases of Children.
Hospital Practice. Forensic Medicine.
Mental Diseases, Infectious Diseases } (twice weekly).
Examination in Forensic Medicine and Public Health.

FIFTH YEAR.

Winter—

Ophthalmology. Diseases of Ear, Nose and Throat. Diseases of Skin
Clinical Medicine, Clinical Surgery, and Clinical Gynecology.
Anæsthetics. Dispensary Practice. Practical Midwifery.

Summer—

Clinical Work in Hospital.
Examination in Midwifery, Medicine, and Surgery, and corresponding Clinical Examinations.

B.—For Students Beginning in Summer.

FIRST YEAR.

Summer—

Botany. Zoology.
Practical Botany, Practical Zoology } On alternate days.
Practical Anatomy (thrice weekly).
Examination in Botany and Zoology.

Winter—

Practical Chemistry (twice weekly). Anatomy. Chemistry.
Physics. Practical Anatomy.
Examination in Chemistry and Physics.

SECOND YEAR.

Summer—

Histology. Practical Anatomy.

Winter—

Physiology. Practical Physiology (twice weekly).
Practical Anatomy and Demonstrations.
Examination in Anatomy and Physiology.

THIRD YEAR.

Summer—

Practical Pathology. Practical Materia Medica.
Hospital Practice and Post-Mortem Examinations. Vaccination.

Winter—

Surgery. Clinical Surgery. Materia Medica. Pathology.
Examination in Pathology and Materia Medica.

FOURTH YEAR.

Summer—

Ophthalmology. Diseases of the Skin.
Clinical Medicine. Mental Diseases.

Winter—

Medicine. Midwifery. Clinical Medicine.
Infectious Diseases. Diseases of Ear, Nose, and Throat.

FIFTH YEAR.

Summer—

Operative Surgery. Public Health. Diseases of Children.
Hospital Practice. Forensic Medicine. Dispensary Practice.
Examination in Forensic Medicine and Public Health.

Winter—

Practical Midwifery. Clinical Medicine, Clinical Surgery, Clinical Gynæcology, and Anæsthetics. Dispensary Practice.

SIXTH SUMMER.

Clinical Work in Hospital.
Examination in Midwifery, Medicine, and Surgery, and Graduating Clinical Examinations.

The candidate must attend Hospital for not less than three years; must attend both Clinical Medicine and Clinical Surgery for a period of at least nine months; twenty cases of Midwifery, or twelve cases and three months' attendance at a Maternity Hospital; and Post-Mortem Examinations for three months.

It is required that, before commencing the study of Practical Midwifery, every student shall have held the offices of Clinical Medical Clerk and Surgical Dresser, and have attended a Course of Lectures on Surgery and Midwifery.

Two of the five years of study must be spent at the University, and not less than eight of the compulsory subjects of study must be taken in the University.

The minimum expense of M.B. and Ch.B., including fees for Classes, Hospital, Matriculation and Examination, amounts to about £145.

Degree of M.D.

Each candidate for this degree who began medical study after 1st October 1892 must be of the age of twenty-four years or upwards, and must have obtained the degrees of M.B. and Ch.B. of the University. He must either have been engaged for two years in general practice, *or* for one year in the naval or military medical services, or in the medical wards of a hospital, or in scientific research. He must present a thesis written by himself on a medical subject, and pass an examination in Clinical Medicine. In this examination the candidate has to write a report and commentary on at least three cases, and has to show a practical knowledge in the application of the ophthalmoscope, laryngoscope, electrical apparatus, and sphygmograph, in the examination of the blood, and in the chemical and microscopical examination of the excreta.

The candidate who has graduated M.B. and C.M. under the old regulations may either proceed to the degree of M.D. under the old regulations (under which he is not required to pass an examination in Clinical Medicine, but must have passed examinations in Greek and in Logic or Moral Philosophy), or he may proceed to the degree as if he had graduated M.B., Ch.B. under the New Regulations.

Degree of Ch.M.

Each candidate must be not less than twenty-four years of age, must possess the degrees of M.B., Ch.B., must have attended the surgical wards of a hospital for one year, or have spent one year in scientific research or in the naval or military medical services, or two years in practice other than that restricted to medicine. He must submit a thesis on a surgical subject, and pass an examination on Clinical Surgery and its branches, Surgical Anatomy, and Operations on the Dead Body.

Fees for M.D. and Ch.M.

The fee for the M.D. degree under the old regulations is five guineas; for the M.D. or Ch.M., under the New Regulations, ten guineas. The candidate must have paid the matriculation fee for the year in which he presents himself for examination or graduation. At each reappearance for examination, under the New Regulations, the fee is five guineas.

Degrees in Public Health.

Two degrees are granted by the University of Edinburgh in the department of Sanitary Science, viz. B.Sc. and D.Sc.

Bachelor of Science.

Candidates must be graduates in Medicine of a University of the United Kingdom or of some other recognised University. In order to obtain the degree two examinations have to be passed.

First Examination.—Before entering for this examination the candidate must, after graduating in Medicine, have worked in a recognised Public Health Laboratory for eight months, of which five consecutive months must be passed in the Public Health Laboratory of the University of Edinburgh.

He must also have attended in a Scottish University a course of lectures on Physics and a course of lectures on Geology, extending over three months, and approved of by the University Court.

The subjects of examination are as follows:—

(1) *Laboratory* work—Practical, written and oral; examination of water, air, foods, beverages, condiments, sewage; soils; disinfectants; building materials; clothing; bacteriology.
(2) Physics. (3) Geology.

Second Examination.—This cannot be taken until eighteen months after graduating in medicine; nor sooner than six months after passing the First B.Sc. Examination. The candidate must have attended two separate courses on Public Health, either in the University of Edinburgh or in some other recognised University or School.

Each course must consist of forty lectures, and include Medicine in its relation to Public Health and Sanitary Engineering.

The candidate must likewise produce evidence that (1) for six months he has studied sanitary work under a Medical Officer of Health for a county or burgh of not less than 25,000 inhabitants; (2) that he has studied clinically for three months infectious diseases in a recognised institution; (3) that for three months he has been instructed by a recognised teacher in mensuration and drawing.

The subjects of examination are:—

(1) Sanitation; (2) Sanitary Law; (3) Vital Statistics; (4) Medicine in Relation to Public Health.

The candidate is examined orally, practically, and by a written paper. *Sanitation* includes making reports on dwellings, workshops, hospitals and sanitary schemes.

The University Court may modify the work and instruction prescribed from time to time.

Doctor of Science.

A graduate after having held the degree of B.Sc. for five years may present himself for the D.Sc. He must present a thesis or a published work or memoirs, the result of his own research, and must pass an examination in Public Health, and in such of its special subjects as the Senatus may determine. The candidate must submit the subject in which he proposes to be examined for approval not less than two months before the examination.

Fees Payable.—First and second examinations, £3, 3s. each; for D.Sc., £10, 10s.

INSTITUTIONS FOR CLINICAL INSTRUCTION IN EDINBURGH.

Royal Infirmary. 860 beds and 40 cots. Fees—perpetual ticket, £12; one year, £6, 6s.; six months, £4, 4s.; three months, £2, 2s. Clinical instruction is given daily in Medicine, Surgery, and all their special branches.

Royal Hospital for Sick Children. 120 beds. Hospital ticket, £1, 1s. Fee for Qualifying Course, £2, 2s.

City Hospital for Infectious Diseases. 600 beds. Fee, £1, 1s.

Royal Maternity and Simpson Memorial Hospital. 40 beds. The Maternity Residency affords accommodation for twelve students.

Royal Asylum, Morningside. 500 beds.

The fee for a qualifying course at each of these last two institutions is £2, 2s.

Victoria Hospital for Consumption and Diseases of the Chest. 50 beds. Out-Patient Department at Spittal Street.

Eye, Ear and Throat Infirmary. 6 beds; 2700 Out-Patients yearly. Fee for three months, £1, 1s.

Royal, New Town, Medical Missionary (Cowgate), Western, Provident (Marshall Street), Eye, and Skin Dispensaries.

PROFESSORS AND LECTURERS IN EDINBURGH.

The Courses given by the Extra-Mural Lecturers are recognised by the University and other examining boards as qualifying for graduation.

Botany— Professor Bayley Balfour, M.D., Botanical Gardens.
James A. Terras, B.Sc., New School.

Zoology— Professor J. Cossar Ewart, M.D., University.
Malcolm Laurie, D.Sc., Surgeons' Hall.
Marion I. Newbigin, D.Sc., Surgeons' Hall.
Hugh Miller, F.Z.S., 29 George Square.

Biology— Malcolm Laurie, D.Sc., Surgeons' Hall.
Marion I. Newbigin, D.Sc., Surgeons' Hall.

Physics— Professor C. G. Barkla, D.Sc., University.
C. G. Knott, D.Sc., University.
Dawson Turner, M.D., Surgeons' Hall.

Chemistry— Professor Walker, University.
G. H. Gemmell, F.I.C., 4 Lindsay Place.
T. W. Drinkwater, Ph.D., Surgeons' Hall.

Anatomy— Professor A. Robinson, M.D., University.
J. Ryland Whitaker, M.B., Surgeons' Hall.

Applied Anatomy—
H. J. Stiles, M.B., University.
J. Ryland Whitaker, M.B., Surgeons' Hall.

Physiology— Professor Sir E. A. Schäfer, LL.D., University.
Alexander Goodall, M.D., Surgeons' Hall.

Materia Medica and Therapeutics—
Professor Sir Thomas R. Fraser, M.D., University.
William Craig, M.D., Surgeons' Hall.
Francis D. Boyd, *C.M.G.*, M.D., New School.
John Orr, M.D., 27 Nicolson Square.

Pathology— Professor Lorrain Smith, M.D., University.
James Miller, M.D., Surgeons' Hall.

Surgery— Professor Alexis Thomson, University.
A. A. Scot Skirving, *C.M.G.*, F.R.C.S., 27 Nicolson Square.
G. L. Chiene, F.R.C.S., New School.
Henry Wade, F.R.C.S., Surgeons' Hall.
J. W. Struthers, F.R.C.S., New School.
W. J. Stuart, F.R.C.S., 59 Forrest Road.
Lewis Beesly, F.R.C.S., Surgeons' Hall.

Clinical Surgery—
The Surgeons of the Royal Infirmary.
Professor F. M. Caird.
Professor Alexis Thomson.
C. W. Cathcart.
J. W. B. Hodsdon.
David Wallace.
Alexander Miles.
John W. Dowden.

Practice of Medicine—
Professor J. Wyllie, M.D., University.
Harry Rainy, M.D., 27 Nicolson Square.
R. A. Fleming, M.D., 27 Nicolson Square.
G. Lovell Gulland, M.D., Surgeons' Hall.
A. Dingwall Fordyce, M.D., Dental Hospital.
W. T. Ritchie, M.D., Surgeons' Hall.

Clinical Medicine—
The Physicians of the Royal Infirmary.
Professor Sir Thomas R. Fraser.
Professor John Wyllie.
Sir R. W. Philip.
Dr. Wm. Russell.
Dr. Lovell Gulland.
Dr. Graham Brown.
Dr. F. D. Boyd.

Midwifery and Gynæcology—
Professor Sir J. Halliday Croom, M.D., University.
D. Berry Hart, M.D., Surgeons' Hall.
J. W. Ballantyne, M.D., Surgeons' Hall.
A. H. F. Barbour, M.D., University and Royal Infirmary.
J. Haig Ferguson, M.D., New School.
W. Fordyce, M.D., New School.
N. T. Brewis, F.R.C.S., Royal Infirmary.
E. M. Inglis, M.B.
John M'Gibbon, M.B., 59 Forrest Road.
G. F. B. Simpson, M.D., New School.
H. S. Davidson, F.R.C.S., New School.

Insanity— G. M. Robertson, M.D., University and Royal Asylum.
Sir J. Batty Tuke, M.D., Surgeons' Hall.
John Keay, M.D., Bangour Village Asylum.

Diseases of the Eye—
W. G. Sym, M.D., Royal Infirmary.
J. V. Paterson, M.B., Royal Infirmary.
A. H. H. Sinclair, M.D. (Ophthalmoscopy), 45 Lauriston Place.

Vaccination—J. B. Buist, M.D., Western and Cowgate Dispensaries.
W. G. Aitchison Robertson, M.D., D.Sc., Royal Dispensary.

Diseases of Children—
Staff of the Sick Children's Hospital.

Diseases of the Skin—
Norman Walker, M.D., Royal Infirmary.
Frederick Gardiner, M.D., Surgeons' Hall.

Diseases of the Ear, Nose and Throat—
A. Logan Turner, M.D., Royal Infirmary.
J. Malcolm Farquharson, M.B., Royal Infirmary.
J. S. Fraser, M.B., Surgeons' Hall.

Forensic Medicine—
Professor Harvey Littlejohn, F.R.C.S., University.
W. G. Aitchison Robertson, M.D., D.Sc., Surgeons' Hall.
John Macmillan, F.R.C.S., New School.

Public Health—
Professor C. Hunter Stewart, M.B., University.
W. G. Aitchison Robertson, M.D., D.Sc., Surgeons' Hall.
Wm. Robertson, M.D., Surgeons' Hall.
John Macmillan, F.R.C.S., New School.

Fevers— Alexander James, M.D., City Hospital.
C. B. Ker, M.D., City Hospital.

Bacteriology—
Professor James Ritchie, M.D., University.
J. Taylor Grant, M.D., 4 Lindsay Place.
James Miller, M.D., Surgeons' Hall.

Diseases of Tropical Climates—
Major D. G. Marshall, I.M.S., University and Surgeons' Hall.

Practical Medicine and Physical Diagnosis—
Alexander Goodall, M.D., Surgeons' Hall.
R. A. Fleming, M.D., Nicolson Square.
J. D. Comrie, M.D., 59 Forrest Road.

Neurology— J. J. Graham Brown, M.D., University.

Physical Methods in the Treatment of Disease—
Harry Rainy, M.D., University.

Diseases of the Chest—
Sir R. W. Philip, M.D., Royal Victoria Hospital.

Medical Electricity and Röntgen Rays—
Dawson Turner, M.D., Surgeons' Hall.

Practical Anæsthetics—
D. C. A. M'Allum, University.

History of Medicine—
J. D. Comrie, M.D., University.

MEDICAL EDUCATION OF WOMEN IN EDINBURGH.

School of Medicine for Women, Surgeons' Hall.

The courses of instruction given in this School qualify for graduation in Medicine. The curriculum and class fees are the same as for male students proceeding to the University Degree or College Qualification respectively. Clinical tuition is provided in the Royal Infirmary and Sick Children's Hospital.

A new dissecting-room is in course of construction, and it is hoped that it will be ready for use in October.

UNIVERSITY OF GLASGOW.

Degrees of M.B. and Ch.B.

Within recent years the facilities for both scientific and practical training have been much extended and improved. New and fully equipped laboratories have been added in connection with nearly all the scientific subjects, the most recent addition being a large building, just completed at a cost of £40,000, for the departments of Physiology, Materia Medica, and Public Health. There is a large and well-equipped Pathological Institute at the Western Infirmary in which the University Classrooms are placed, and the Professor of Pathology is *ex officio* Pathologist to the Infirmary, and has control of all the pathological material for purposes of instruction and investigation. A corresponding arrangement forms part of the new scheme just being completed with regard to the Royal Infirmary. The Western Infirmary is close to the University, and has hitherto been the chief field of clinical instruction of University students. A scheme has, however, been just carried through, according to which University Chairs, on the same footing as those already in existence, have been instituted at the Royal Infirmary in the subjects of Pathology, Medicine, Surgery, Midwifery, and Gynæcology. Students will accordingly have the option of taking the subjects of the two final years of study at the Royal Infirmary, and in this way the advantage of a very wide clinical field along with systematic instruction under University Professors. The great disadvantage of attending classes at Gilmorehill and going to the Royal Infirmary, at a considerable distance, for clinical work will thus be done away with.

The latest development is the institution, at the Western Infirmary, of a Laboratory for Clinical Pathology, the Director of which is also a University Lecturer, and gives instruction to University students in the scientific methods of clinical diagnosis.

Under the New Ordinance of the University Court, which came into operation on 1st October 1911, the regulations for these Degrees (except in regard to the Preliminary Examination) have been considerably altered, the chief modifications being as follows:—1. A rearrangement of the subjects of the four Professional Examinations. 2. The rendering compulsory of some courses which hitherto have been optional. 3. The imposition of restrictions as to the period at which certain subjects of the curriculum can be taken.

The academical year is now divided into three terms of about ten teaching weeks each, and the following list gives the subjects of the several Professional Examinations, with the period of study required:—

First Examination.

Chemistry (including Organic Chemistry), 2 terms: with Practical Chemistry, 1 term.
Physics (with practical work), 1 term.
Botany (with practical work), 1 term.
Zoology (with practical work), 1 term.

Second Examination.

Anatomy and Practical Anatomy, 5 terms.
Physiology and Practical Physiology, 3 terms.

Third Examination.

Materia Medica and Therapeutics, 2 terms.
Pathology and Practical Pathology, 3 terms.

Fourth Examination.

Medical Jurisprudence and Public Health, 2 terms.
Surgery, 2 terms.
Practice of Medicine, 2 terms.
Midwifery and Diseases Peculiar to Women and Infants, 2 terms.

The candidate must have attended the Medical and Surgical practice of a general hospital for three years, and courses of Clinical Surgery and Clinical Medicine of nine months in each case. He must also have received instruction, under conditions laid down, in the following subjects:—

Mental Diseases.
Practical Pharmacy.
Out-Patient Practice.
Clinical Clerking in Medicine.
Clinical Clerking or Dressing in Surgery.
Post-Mortem Examinations.
Infectious Diseases.
Gynæcology.
Diseases of Children.
Ophthalmology.
Diseases of the Ear and Throat.
Dermatology.
Practical Midwifery with the Conduct of Cases of Labour.
Vaccination.
Administration of Anæsthetics.
Operative Surgery.

The following courses cannot be taken till after the end of the terms of the curriculum indicated in each case:—

Physiology and Practical Physiology—third term, and not (except Practical Histology) till at least two of the subjects of the First Examination have been passed.

Materia Medica and Therapeutics and Pathology and Practical Pathology—sixth term.

Medical Jurisprudence and Public Health—eighth term.

Midwifery, etc., Surgery and Medicine—ninth term, with the exception that Surgery may be attended after the sixth term, provided that the candidate has passed the Second Professional Examination.

Hospital Practice, Clinical Medicine, Clinical Surgery—sixth term.

The curriculum extends over five years, two of which must be spent in the University of Glasgow. The remaining three years may be spent elsewhere, as indicated in the Ordinance and under the conditions thereby imposed.

Except in the case of Medicine, Surgery, and Midwifery, the Senate may accept the Professional Examinations of other Scottish Universities.

There are a number of other administrative regulations which need not here be specified in detail.

The examination fees are £23, 2s. in all, with an additional fee of £1, 1s. for every re-entry. The cost of the curriculum amounts roughly to £145, spread over the five years of the course, and at present the class fees are charged at so much a class. There is, however, a movement on foot to introduce a "composition" or "inclusive" fee per session, but the total will work out at practically the above figure.

Clinical Facilities.

The following general hospitals, all of which are equipped in a modern fashion, are available for instruction of University Students, viz. the Western Infirmary close to the University, the Royal Infirmary, to which the new Medical Chairs are attached, each of these having at present about 600 beds, and the Victoria Infirmary, with 260 beds, on the south side of the city.

The Eye Infirmaries at 174 Berkeley Street and 80 Charlotte Street (between them 100 beds), and the Ophthalmic Institution at 126 West Regent Street (35 beds), furnish ample opportunities for instruction in the important branch with which they deal; Insanity is equally well provided for at Gartnavel (of which the Superintendent is University Lecturer on that subject—460 beds), at Gartloch (806 beds), and at Woodilee (1160 beds), while the City Fever Hospitals at Ruchill (540 beds) and Belvidere (680 beds) are available for the study of Zymotic Diseases. The Ear, the Throat, and Nose, and the Skin are dealt with in the Western and Royal Infirmaries.

A new Maternity Hospital, with every modern convenience and equipment, was recently opened in Rottenrow, with accommodation for 104 patients, and a Hospital for Sick Children, of greatly increased dimensions, in freer air, is in course of erection at Yorkhill within a short distance of the University, which will take the place of the existing building in Scott Street (74 beds). The beds at Yorkhill will number 200.

The Ordinance is applicable alike to men and women students, and much of the instruction is given in "mixed" classes by the Professors. There are, however, exceptions to this, some classes for women alone being held in a separate building (Queen Margaret College), and some for both sexes (in the main buildings at Gilmorehill) at different hours. The Hospital work in the case of women has hitherto been taken entirely in the Royal Infirmary, there being no accommodation for them in the Western. This arrangement is likely to continue.

Professors.

Zoology— Professor Graham Kerr, M.A., F.R.S.

Chemistry— Professor Ferguson, M.A., LL.D., F.S.A.

Practical Physics—
Professor Gray, M.A., LL.D., F.R.S.

Botany— Professor Bower, Sc.D., F.R.S.

Anatomy— Professor Bryce, M.A., M.D.

Physiology— Professor Noël Paton, B.Sc., M.D.

Materia Medica and Therapeutics—
Professor Stockman, M.D.

Pathology— Professor Muir, M.A., M.D., F.R.S.

Medical Jurisprudence and Public Health—
Professor Glaister, M.D., D.P.H.(Camb.).

Surgery and Clinical Surgery—
Professor Sir William Macewen, M.D., LL.D., D.Sc., F.R.S.

Midwifery— Professor Murdoch Cameron, M.D.

Practice of Medicine and Clinical Medicine—
Professor T. Kirkpatrick, Mus.B., M.A., M.D.

Public Health—
Professor Gilmour, M.D., D.P.H. (Camb.).

Pathology— Professor John H. Teacher, M.A., M.D.

Midwifery and Clinical Midwifery—
Professor Walter R. Hunter, D.Sc., M.D.

Surgery and Clinical Surgery—
Robert Kennedy, M.A., D.Sc., M.D.

Materia Medica—
John M. Munro Kerr, M.D.

LECTURERS.

Chemical Jurisprudence—
T. S. Patterson, Ph.D., D.Sc.

Physiology and Histology—
E. P. Gilmour, M.D., D.Sc.

Psychological Medicine—
Henry J. Watt, M.A., Ph.D.

Public Health—
Professor Gilmour, M.D., D.P.H. (Camb.).

Eye— Thomas Snell, M.D.

Throat and Nose—
James Walker Downie, M.B.

Skin— John Wyllie Mavill, M.B.

Clinical Pathology—
Wm. H. Browning, M.D.

Bacteriology—
W. B. M. Martin, M.D.

Psychological Medicine—
John Shaw Dunn, M.A., M.D.

Physics— James G. Gray, D.Sc.

Embryology—
James F. Gemmell, M.A., D.Sc., M.D.

Dentistry— Laurie E. Oswald, M.D.

DEAN.

Professor Noel Paton, D.Sc., M.D.

DEGREE OF M.D.

The degree is open to holders of the M.B., C.M. (Hons.), after 1 year of one of the years, according to circumstances, but beyond that the thesis the latter. The requirements are (a) an Examination in Clinical Medicine, in some approved Department of Medical Science or Practice, (b) a Thesis on any branch of knowledge comprised in the examinations for M.B., C.M., comprising a subject which is satisfactorily completed, and (c) a fee of £10, with an extra charge of £5 5s. for each re-entry.

DEGREE OF CH.M.

This may be obtained on practically the same terms as the M.D. degree, the only difference being (1) that the examination is in Surgical Anatomy, operations upon the dead body, in Clinical Surgery or an approved special

department of Surgery, and (2) that the Thesis must not be on a subject which is exclusively medical.

Degree of B.Sc. in Public Health.

Candidates must be graduates in Medicine of a University in the United Kingdom or of some other University recognised for the purpose by the Glasgow University Court, and they must thereafter have received practical instruction, including instruction in Chemistry, Bacteriology, and the Pathology of the Diseases of Animals transmissible to man, for at least twenty hours per week during a minimum period of eight months, five consecutive months of which must be in the Public Health Laboratory of the University of Glasgow. Either before or after graduation in Medicine they must also have attended, in the University of Glasgow or elsewhere, courses of Physics and Geology, and after graduation two separate courses in Public Health (Medicine and Engineering), as well as practically studying sanitary work for six months under a Medical Officer of Health in the United Kingdom, or a Sanitary Staff Officer of Health of the Royal Army Medical Corps, besides attending three months' practice of a Hospital for Infectious Diseases, where methods of administration can be studied, and three months in Mensuration and Drawing. The examinations are, *First*, Public Health, Laboratory Work, Physics, and Geology; *Second*, Sanitation, Sanitary Law, Vital Statistics, and Medicine in its bearings on Public Health. The examination fee is £6, 6s.

Degree of D.Sc. in Public Health.

Five years after obtaining the B.Sc. degree, graduates may proceed to the higher Degree of D.Sc., the requirements being (*a*) a Thesis or a published memoir or work to be approved by the Senate; and (*b*) an examination in Public Health and in such of its special departments as the Senate and University Court may determine. The fee for this degree is £10, 10s.

QUEEN MARGARET COLLEGE FOR WOMEN.

A full course of Medicine and Surgery is obtainable partly at Queen Margaret College, but in recent years the tendency has been to have mixed classes at Gilmorehill. The regulations, fees, etc., are similar to those for men. The buildings are pleasantly situated in grounds of their own, close to the Botanic Gardens. The anatomical department is excellently arranged and most complete. Clinical work is amply provided for in the Royal Infirmary and its Dispensaries, and in the Royal Hospital for Sick Children, the Glasgow Maternity Hospital, the Royal Asylum of Gartnavel, and the Belvidere Fever Hospital. There are also arrangements for special study and research.

Students can have board and lodging at Queen Margaret Hall, within easy reach of the College, at the rate of about one guinea per week.

All information necessary can be obtained from Miss Melville, Queen Margaret College, Glasgow.

ST. MUNGO'S COLLEGE.

This, the Medical School of the Royal Infirmary, the largest hospital in Glasgow, is situated in Cathedral Square, Castle Street, and has car communication with every part of the city. St. Mungo's College is in the Infirmary grounds.

The Infirmary has, including the Ophthalmic Department, over 620 beds, the average number occupied in 1912 being 620. When the reconstruction of the Infirmary, long in progress, is completed, it will have about 700 beds. There are special beds and wards for Diseases of Women, of the Throat, Nose, and Ear, Venereal Diseases, Burns, and Septic Cases.

At the Outdoor Department the attendances in 1905 numbered over 62,000. In addition to the large Medical and Surgical Departments, there are Departments for Special Diseases—namely, Diseases of Women, of the Throat and Nose, of the Ear, of the Eye, of the Skin, and of the Teeth. A fully-equipped Electrical Pavilion was opened a few years ago, and year by year the latest and most approved apparatus for diagnosis and treatment has been added. Wards are set apart for the teaching of women students.

Appointments.—Five House-Physicians and nine House-Surgeons, having a legal qualification in Medicine and Surgery, who board in the Hospital free of charge, are appointed every six months. Clerks and Dressers are appointed by the Physicians and Surgeons. As a large number of cases of Acute Diseases and Accidents of a varied character are received, these appointments are very valuable and desirable.

Fees.—The fees for hospital attendance, including Clinical Lectures and Tutorial Instruction, attendance at the Outdoor Department, at the Pathological Department, Post-Mortem Examinations, and the use of the Museum, which has not long since been rearranged and catalogued, are as follows: For one year, £10, 10s.; for six months, £6, 6s.; for three months, £4, 4s. Students who have paid fees to the amount of £21 to the Glasgow Royal Infirmary are permitted to attend, in any subsequent year or years, one Winter and one Summer Course of Instruction in the Infirmary without further payment; and Students who have paid to any other hospital in the United Kingdom fees, being not less than £21, in virtue of which they are entitled to attend without further payment, shall be admitted as Students of the Royal Infirmary on payment of £3, 3s. for six months, or £1, 11s. 6d. for three months.

ANDERSON'S COLLEGE MEDICAL SCHOOL,

Dumbarton Road, Partick, Glasgow.

The old Institution known as "Anderson's University" was founded by the will of John Anderson, M.A., F.R.S., in 1795, and the medical school connected therewith dates back to the year 1799.

In 1877 the name of the Institution was altered from "Anderson's University" to "Anderson's College." In 1887 the medical school of Anderson's College became a distinct Institution known as "Anderson's College Medical School."

The new buildings are situated in Dumbarton Road, immediately to the west of the entrance of the Western Infirmary and four minutes' walk from the University. They are constructed on the best modern principles, and are provided with all the appliances requisite for the conduct and management of a fully-equipped medical school.

Classes are conducted in all the subjects of the five years' curriculum:—

Anatomy—Professor A. M. Buchanan, M.A., M.D.
Physics—Professor Peter Bennett.
Chemistry—Professor J. Robertson Watson, M.A.
Botany—Professor B. G. Cormack, M.A., B.Sc.
Zoology—Professor W. Ferguson Mackenzie, M.B.
Physiology—Professor A. J. Ballantyne, M.D., Ch.B.
Materia Medica—Professor J. P. Duncan, M.B., B.Sc.
Medical Jurisprudence—Professor Carstairs Douglas, D.Sc., M.D., F.R.S.E.
Midwifery—Professor W. D. Macfarlane, M.B., C.M.
Surgery—Professor Archibald Young, B.Sc., M.B.
Practice of Medicine—Professor John Cowan, B.A., D.Sc., M.D.
Ophthalmic Medicine and Surgery—A. Freeland Fergus, M.D., F.R.S.E.
Aural Surgery—James Galbraith Connal, M.B.
Diseases of Throat and Nose—John Macintyre, M.B., F.R.S.E.
Mental Diseases—John Carswell, F.R.F.P.S.G.
Public Health Laboratory—Professor Carstairs Douglas, D.Sc., M.D., F.R.S.E.
Pathology—At the Western or Royal Infirmary.

Degrees and Diplomas.—Certificates of attendance on the classes at Anderson's College Medical School are received by the Universities of London and Durham, by the Royal University of Ireland, and by all the Royal Colleges and Licensing Boards in the United Kingdom. They are also recognised by the Universities of Glasgow and Edinburgh under certain conditions which are stated in the Calendar of this school. The Public Health Laboratory Course is recognised as qualifying for the Diploma granted by the Universities of Oxford and Cambridge, the Scottish Conjoint Board, and the Royal Irish Colleges.

Candidates for the Licence in Dental Surgery can obtain at this school the full medical curriculum which is required. The courses special to dentistry are conducted at the Glasgow Dental School, 15 Dalhousie Street.

Malcolm Kerr Bursary in Anatomy. Value about £10. Open to students of the junior anatomy class during session 1907-1908.

The Carnegie Trust will pay the fees of students at Anderson's, on conditions regarding which particulars may be obtained from Sir W. S. M'Cormick, LL.D., Carnegie Trust Offices, Edinburgh.

Class Fees.—For each course of lectures (anatomy, ophthalmic medicine and surgery, aural surgery, diseases of throat and nose and mental diseases excepted); first session, £2s, 2s.; second session (in Anderson's College), £1, 1s.; afterwards free. For practical classes (except anatomy), viz. chemistry, botany, zoology, physiology, pharmacy, operative surgery: first session, £2, 2s.; second session, £2, 2s.

Reduced joint fees in zoology and in botany, for lectures and practical class when taken in same summer session, £3, 3s.; for either course separately, £2, 2s.

Anatomy.—Winter—first session, lectures and practical anatomy, £5, 5s.; practical anatomy alone, £2, 2s.; second session, lectures and practical anatomy, £4, 4s.; practical anatomy, £2, 2s.; for summer fees, see Calendar.

ABERDEEN UNIVERSITY.

The course of study for the degree of M.B., Ch.B. extends over five years, of which two at least must be spent in the University of Aberdeen.

The curriculum is the same as in the other Scottish Universities as far as relates to attendance on University classes, to clinical study at a General Hospital, to attendance on courses of Clinical Surgery, Clinical Medicine, Mental Diseases, and Practical Pharmacy, Operative Surgery, Anæsthetics, to instruction in Vaccination, to attendance on Cases of Labour, and to the practice of a Dispensary.

The candidate must also, before admission to the final examination, produce the following certificates:—

1. That he has been present at not fewer than twenty-five post-mortem examinations, some of which he must have personally taken part in performing.

2. That he has attended a course of instruction in Infectious Diseases consisting of not fewer than ten meetings, in a Hospital for the treatment of such diseases containing at least a hundred beds.

3. That he has attended in a Hospital a course of instruction in Gynæcology consisting of not fewer than twenty meetings.

4. That he has attended in a special hospital a course of instruction in the Diseases of Children, consisting of not fewer than twenty meetings.

5. That he has attended in the Ophthalmological Department of a Hospital or Dispensary a course of instruction in Ophthalmology, consisting of not fewer than thirty meetings extending over one term.

6. That he has attended in a Public Hospital or Dispensary a course of instruction in Diseases of the Ear, Nose, and Throat, consisting of not fewer than twenty meetings.

7. That he has attended in a Public Hospital or Dispensary a course of instruction in Dermatology, consisting of not fewer than twenty meetings.

Certificates for these various classes and courses must attest not only regular attendance, but also due performance of the work.

There is no prescribed order of study, but a scheme, representing the minimum curriculum, has been drawn up for the guidance of students, and is printed in the Calendar.

THE FOLLOWING ARE THE CLASSES IN THE MEDICAL FACULTY :—

WINTER SESSION.

Zoology—Professor John Arthur Thomson, M.A.
Chemistry—Professor Japp, M.A., LL.D., F.R.S.
Anatomy—Professor Reid, M.D., F.R.C.S.
Practical Anatomy—Professor Reid and Assistants.
Physiology (*Syst. and Pract.*)—Professor MacWilliam, M.D.
Materia Medica—Professor Cash, M.D., LL.D., F.R.S.
Pathology (*Syst. and Pract.*)—Professor George Dean, M.B., C.M.
Surgery—Professor John Marnoch, M.A., M.B., C.M.
Medicine—Professor Mackintosh, M.A., M.D.
Midwifery and Diseases of Women and Children—Professor R. G. M'Kerron, M.A., M.D.

SUMMER SESSION.

Botany—Professor Trail, M.A., M.D., F.R.S.
Practical Botany—Professor Trail.
Zoology—Professor Thomson.
Practical Zoology—Professor Thomson.
Physics—Professor Niven, M.A., D.Sc., F.R.S.
Practical Chemistry—Professor Japp and Assistants.
Practical Anatomy—Professor Reid and Assistants.
Practical Materia Medica and Pharmacy—Professor Cash and Assistants.
Physiology (*Syst. and Pract.*)—Professor MacWilliam.
Forensic Medicine—Professor Hay, M.D., LL.D.
Practical Hygiene and Forensic Medicine—Professor Hay.
Pathology (*Syst. and Pract.*)—Professor Dean.
Practical Midwifery and Gynæcology and Clinical Diseases of Children—Professor M'Kerron.

Systematic and Practical Pathology, and Systematic and Practical Physiology respectively are now taught as part of one continuous course, occupying a whole academic year, *i.e.* a summer and a winter session.

There are Assistants to the Professors in the Medical Faculty appointed annually, two in the Department of Anatomy, Physiology, Botany, Zoology, Pathology, Materia Medica and Chemistry, and one in each of the other departments.

Clinical Medicine and Clinical Surgery are taught by the Physicians and Surgeons of the Royal Infirmary.

The following are recognised as Lecturers :—

Lecturer on Mental Diseases . .	Wm. Reid, M.D.
„ Ophthalmology . .	C. H. Usher, M.B., B.S., F.R.C.S. A. Rudolph Galloway, M.A., M.B., C.M.
Lecturer on Vaccination . .	T. Fraser, M.A., M.B., Ch.B.
„ Skin Diseases . . .	J. F. Christie, M.A., M.B., C.M.
„ Diseases of Ear, Throat, and Nose . .	J. Mackenzie Booth, M.D., C.M. H. Peterkin, M.B.
„ Medical Electricity . .	J. R. Levack, M.B., C.M.
„ Anæsthetics . . .	Alex. Ogston, M.B., C.M. D. W. Geddie, M.B., C.M.

All the University Classes are held at Marischal College.

Tutorial Classes are held in connection with most of the Systematic Courses, and practical instruction is given in the fully-equipped Laboratories connected with the several departments.

Graduates or others desirous of engaging in special study or research may be allowed by the Senatus to work in any of the Laboratories on payment of the usual matriculation fee.

General clinical instruction is obtained in the following Medical Institutions :—

The Royal Infirmary of Aberdeen.

This General Hospital, situated about seven minutes' walk from Marischal College, has been recently constructed on the most modern principles, and is fully equipped with all the requirements for medical work and teaching. It accommodates upwards of two hundred patients : the number of patients admitted during the year 1912 was 3083, and the number of out-patients treated during the same period was 18,112.

Six resident medical officers are appointed annually, three in May and three in September, to hold office for twelve months. Salary, £26, 5s. with board.

Fees.—Perpetual fee to hospital practice, £10, or first year, £5, 10s., second year, £5, afterwards free ; clerkship in medicine, £1, 1s. ; dressership in surgery, £1, 1s. ; pathological demonstrations, £2, 2s. (Special courses of lectures are charged for.)

The Royal Hospital for Sick Children

Is situated about five minutes' walk from Marischal College, and accommodates over 80 patients. The number of patients admitted in 1912 was 1112, and the number of out-patients treated was 1856. Each student must act as clerk for six weeks in the medical and surgical wards respectively.

There is one qualified house physician and surgeon (resident) who holds office for six months. Salary at the rate of £25 per annum.

Fee for hospital practice, £2, 2s. first year ; subsequent years, £1, 1s.

The Royal Asylum

Is about fifteen minutes' walk from Marischal College. It accommodates over 950 patients, and has been recently fitted up with a fully-equipped hospital and a laboratory.

The senior physician is recognised by the University as lecturer on mental diseases, and delivers a qualifying course of lectures.

The City (Fever) Hospital

Is about ten minutes' walk from Marischal College, and accommodates 200 patients.

Senior students are admitted for instruction in fevers twice a week under the visiting physician (who is the Medical Officer of Health for the City) and his assistant. Fee, £1, 1s.

General Dispensary, Maternity Hospital and Vaccine Institution.

This is about five minutes' walk from Marischal College.

The total number of cases treated during 1912 was 8376, and the number of patients treated at their own homes 3053. There were 453 midwifery cases.

Fees.—General practice, £3, 3s. ; vaccination certificate and instruction, £1, 1s. ; Maternity Hospital, £3, 3s.

Ophthalmic Institution.

This Institution is situated about three minutes' walk from Marischal College. The surgeon in charge is recognised by the University as a lecturer on ophthalmology.

During 1910, 50 in-patients and 4537 out-patients were treated.

PROFESSIONAL EXAMINATIONS.

There are four examinations: the subjects and regulations of these are common to the Universities of Aberdeen and Glasgow.

Degree of M.D.

The regulations with regard to the age and other qualifications of the candidate are similar to those in the other Scottish Universities. He must submit a thesis written by himself upon any medical subject, and pass an examination in Clinical Medicine and in such Special Departments of Medicine as he may select.

Degree of Ch.M.

Each candidate must be not less than twenty-four years of age, and must hold the degree of M.B., Ch.B. of the University. He must produce a certificate of having been engaged for at least one year in attendance in the surgical wards of a hospital, or in scientific research, or in the naval and military services, or for two years in practice other than practice restricted to medicine. He must present a thesis on a surgical subject and pass an examination on Clinical Surgery, Surgical Anatomy, and Operations on the Dead Body.

Diploma in Public Health (D.P.H.).

The diploma is conferred, after special instruction and examination, on any one who has been at least twelve months a graduate in medicine of a University in the United Kingdom; if not a graduate of Aberdeen University, the candidate must attend a course of instruction in this University in one or more subjects embraced in the examination for the diploma.

Each candidate must have attended a course of instruction in Public Health.

The qualifying post-graduate instruction embraces—

(*a*) Regular attendance, for three months, at a hospital for infectious diseases, at which opportunities are afforded for the study of methods of administration.

(*b*) Daily association for a period of six months (of which at least three months must be distinct from the period of laboratory instruction) in the duty, routine and special, of Public Health Administration, under the supervision of a recognised Medical Officer of Health.

(*c*) Practical instruction, for at least six months, in laboratory work, which includes examination of water, air, soil and foods, and the study of bacteriology, disinfection, ventilation, water supply and sewerage, and the framing of reports of analysis. The laboratory attendance must extend over at least fifteen hours a week.

The qualifying courses of laboratory instruction in Aberdeen University are given in the Public Health Laboratory (Fee, £6, 6s.), and the Bacteriological Laboratory (Fee, £4, 4s.).

Instruction in Public Health Administration is given by Professor Hay, Medical Officer of Health of the City of Aberdeen (Fee, £6).

Instruction is given in the Drawing and Interpretation of Plans (Fee, £1, 1s.).

A short course of lectures is given on Statistical Methods and their application to Public Health Statistics.

The diploma is conferred after an examination in March and July of each year.

The examination is written, oral and practical, and is divided into two parts.

Part I. embraces the following subjects in their application to Public Health :—

(*a*) Physics, Engineering and Meteorology.

(*b*) Chemistry, Microscopy and Bacteriology.

Part II. embraces—

(*a*) General Hygiene.

(*b*) Sanitary Law and Vital Statistics.

Part I. may be taken alone, or both parts together.

The written examinations occupy two days, and the oral and laboratory and outdoor examinations three to four days.

Candidates must send in their names and pay the fees a fortnight before the examination. Examination fee is five guineas. Re-examination fee one guinea.

FEES.

Arrangements are now being made, in conjunction with the other Scottish Universities, for the institution of an inclusive fee for the courses of instruction leading to the M.B. and Ch.B. degrees.

The cost of matriculation, class and hospital fees for the whole curriculum, including the fees for the degrees, is usually about £160.

UNIVERSITY OF ST. ANDREWS.

The degrees conferred are Bachelor of Medicine and Bachelor of Surgery (M.B., Ch.B.), Doctor of Medicine (M.D.), and Master of Surgery (Ch.M.). The inclusive fee for the University instruction for M.B., Ch.B. is ninety guineas; and the inclusive fee for the clinical courses is forty guineas. These fees may be paid by annual instalments. For M.D. or Ch.M. the fee payable is fifteen guineas.

Two constituent colleges of the University provide medical teaching. The United College, St. Andrews, offers classes for two years, and the student may pass the first and second professional examinations at St. Andrews. There are excellent opportunities for combining degrees in Arts and Science with those of Medicine. Inclusive fees have been arranged for students who wish to take advantage of these opportunities. There are many bursaries offered to students who desire to graduate in Medicine, and it should be added that the cost of rooms and of living in St. Andrews is considerably less than in the larger University cities. For women there is an excellent residential hall, which is governed by the University authorities. The medical school is now carried on in buildings specially built for the purpose.

The Conjoint School of Medicine, Dundee, supplies a complete course of medical study, and the student from United College, St. Andrews, completes his curriculum there. Large new buildings with well-equipped laboratories have been provided. Both in the Medical School and the wards of the Dundee Royal Infirmary the students have unrivalled opportunities for gaining a practical knowledge of medical science and of medical work, for the students have that individual attention and supervision which the larger schools cannot give.

The Dundee Royal Infirmary contains 400 beds, and includes special wards for obstetrics, gynæcology, children's diseases, ophthalmology, dermatology, otology, incipient insanity, and electrical therapeutics. New out-patient departments are now in use. There is a large out-door maternity department. Hospital Fees—Surgical and Medical £3, 3s. yearly; Perpetual Ticket, £10, or in instalments, £10, 10s.; Obstetric Cases, £2, 2s.; Obstetric Clinic, £1, 1s.

Westgreen Asylum at Liff provides abundant material for instruction in mental diseases, and the City Fever Hospital in fevers. The Dundee Eye Institution furnishes cases for instruction in ophthalmology.

The Diploma of Public Health (D.P.H.) may be taken at the Conjoint School of Medicine, Dundee.

All classes in the University are open to men and women alike.

UNITED COLLEGE, ST. ANDREWS.

PROFESSORS AND LECTURERS.

Physics— Professor Butler, M.A.
Chemistry— Professor Irvine, Ph.D., D.Sc.
Zoology— Professor M'Intosh, M.D., LL.D., F.R.S.
Botany— R. A. Robertson, M.A., B.Sc.
Physiology—Professor Herring, M.D.
Anatomy— Professor Musgrove, M.D., F.R.C.S.
Regional Anatomy—
D. R. Dow, M.B.

UNIVERSITY COLLEGE, DUNDEE.

PROFESSORS AND LECTURERS.

Physics— Professor Peddie, D.Sc.
Chemistry— Professor Hugh Marshall, D.Sc., F.R.S.
Zoology— Professor Thompson, M.A., D.Litt., C.B.
Botany— Professor Geddes, F.R.S.E.
Physiology—Professor Waymouth Reid, M.B., Sc.D., F.R.S.
Anatomy— Principal Mackay, M.D., LL.D.
Lieut.-Col. Lamont, M.B., I.M.S. (retired).
Surgery— Professor MacEwan, M.D., C.M.
Surgery, Clinical—
D. M. Greig, C.M., F.R.C.S.
A. Don, C.M., F.R.C.S.
L. Turton Price, Ch.B., F.R.C.S.
Medicine— Professor Stalker, M.D.
Medicine, Clinical—
Professor Stalker, M.D. ; J. Mackie Whyte, M.D.
Materia Medica—
Professor C. R. Marshall, M.D.
Pathology— Professor Sutherland, M.B.
Midwifery and Gynecology—
Professor Kynoch, M.B., F.R.C.P., F.R.C.S.
Midwifery and Gynecology, Clinical—
Professor Kynoch, M.B.
R. C. Buist, M.D.
Forensic Medicine—
C. Templeman, M.D., D.Sc., M.O.H.
Ophthalmology—
Angus MacGillivray, M.D., D.Sc.
Diseases of Ear, Nose, and Throat—
R. P. Mathers, M.D.
Diseases of Children—
D. M. Greig, C.M., F.R.C.S.
J. S. Y. Rogers, M.B.

Diseases of Skin—
W. E. Foggie, M.D.
Mental Diseases—
W. Tuach Mackenzie, M.D.
Vaccination—
R. C. Buist, M.D.
Clinical Pathology—
F. M. Milne, M.B., D.P.H.
Clinical Medical Tutor—
Charles Kerr, M.B.
Clinical Surgical Tutor—
W. L. Robertson, Ch.B., F.R.C.S.
Dean of the Faculty of Medicine—
Professor Kynoch.

QUALIFICATIONS GIVEN BY THE SCOTTISH COLLEGES.

The Royal College of Physicians of Edinburgh, the Royal College of Surgeons of Edinburgh, and the Royal Faculty of Physicians and Surgeons of Glasgow, conjointly confer the Triple Qualification (L.R.C.P.E., L.R.C.S.E., L.R.F.P.S.G.). Female candidates are admitted to the examinations for this qualification.

Preliminary Examination. — This examination must be passed before the student commences professional study. It may be passed before any of the Boards recognised by the General Medical Council, and enumerated in the Regulations of the Colleges. The Educational Institute of Scotland conducts a qualifying Preliminary examination for medical students, in Edinburgh and Glasgow, on behalf of the Colleges. This examination embraces English, Latin, Mathematics, and either Greek, French, German, Italian, or other modern language. All the subjects may be passed at one or not more than two times. Calendar, containing examination papers, can be had from Mr. Hugh Cameron, M.A., 34 North Bridge Street, Edinburgh. Price 1s.

Professional Education.—The curriculum must extend over five years. Graduates in Arts or Science of any recognised University who have spent a year in the study of Physics, Chemistry, and Biology, and have passed an examination in these subjects for the degrees in question, are exempted from the first year of study. The fifth year of study should be devoted to clinical work in one or more recognised Hospitals or Dispensaries, and to the study of special diseases. For information regarding the payment of class fees by the Carnegie Trust, *vide* p. ii.

Order of Study which is Recommended.

First Summer— Physics and Elementary Biology.
First Winter— Five months' course in Chemistry and Anatomy; three months' course in Practical Chemistry; Practical Anatomy.
Second Summer— Practical Anatomy; Practical Physiology.
Second Winter— Practical Anatomy; Physiology—Five months' course.
Third Summer— Three months' course in Practical Pathology, Materia Medica, and Practical Materia Medica; Surgical Hospital Practice.
Third Winter— Six months' course in Surgery and Clinical Surgery; Attendance at Surgical Wards, Anæsthetics; Pathology.
Fourth Summer—Three months' course in Midwifery and Gynæcology, in Medical Jurisprudence and Public Health, and in Clinical Surgery; Hospital Practice.

Fourth Winter— Six months' course in Medicine and Clinical Medicine; Hospital Practice.

Fifth Summer— Three months at Clinical Medicine; Hospital; Insanity; Diseases of Children; Diseases of Eye.
Practical Midwifery—Personal attendance on twelve cases under the supervision of a medical practitioner, *or* three months' attendance at a Lying-in Hospital and personal attendance on six cases.

Fifth Winter— Hospital Practice; Fevers; Dispensary; Vaccination: Skin Diseases; Ear and Throat Diseases; Eye Diseases; Operative Surgery.

Professional Examinations.—Four of these are held during the curriculum. Each is held quarterly in Edinburgh and twice a year in Glasgow. Candidates may enter for all or any of the subjects at the First, Second, and Third Examinations. In the Final Examination the subjects of Medicine, Surgery and Midwifery shall be taken together at the conclusion of five Winters and five Summers of Medical Study, provided that a period of twenty-four months has elapsed since passing the Second Professional Examination; and the subject of Medical Jurisprudence and Public Health may be taken at any time after passing the Third Examination. Candidates are advised to enter for the entire examinations.

First Examination— Physics, Chemistry and Elementary Biology. This should be passed before the beginning of the second winter session.

Second Examination— Anatomy, Physiology, including Histology. This should be passed at the end of the second year of study.

Third Examination— Pathology, Materia Medica and Pharmacy. This should be taken at the end of the third year.

Final Examination— Can only be taken at the end of the fifth year. The candidate must have attained the age of twenty-one. It includes—

1. Medicine, Therapeutics, Medical Anatomy, Clinical Medicine.
2. Surgery, Surgical Anatomy, Clinical Surgery, Diseases of the Eye.
3. Midwifery and Diseases of Women and New-born Children.
4. Medical Jurisprudence and Public Health. This can be taken any time after the Third Examination.

Fees for Professional Examinations.

For each of the first three, £5; for the final, £15. The minimum total expense, inclusive of fees for classes and examinations, amounts to £115.

Diploma in Public Health of the Royal Colleges.

The Diploma is granted by the Triple Qualification Board.

1. Every candidate for examination must hold a registrable medical qualification, which has been registered under the Medical Acts.

2. After obtaining such qualification he must have attended a recognised Laboratory in which Chemistry, Bacteriology, and the Pathology of the Diseases of Animals Transmissible to Man are taught; and the certificate must show that the candidate has conducted Chemical and Bacteriological analyses of air, water, sewage and foods, and certify that the candidate has attended not less than four calendar months, and that he has worked in the

Laboratory for at least 240 hours, of which not more than one-half shall be devoted to Practical Chemistry.

3. After obtaining a registrable qualification he must during six months (of which at least three months shall be distinct and separate from period of Laboratory instruction required) have been engaged in acquiring a practical knowledge of the duties of Public Health Administration for not less than sixty working days under the personal supervision of—

(*a*) In England or Wales, the Medical Officer of Health of a County or single sanitary District having a population of not less than 50,000, or a Medical Officer of Health devoting his whole time to Public Health work ; or

(*b*) In Scotland or Ireland the Medical Officer of Health of a County or District or Districts with a population of not less than 30,000 ; or

(*c*) In Ireland, a Medical Superintendent Officer of Health of a District or Districts having a population of not less than 30,000 ; or

(*d*) In the British Dominions outside the United Kingdom, a Medical Officer of Health of a Sanitary District having a population of not less than 30,000, who himself holds a Registrable Diploma in Public Health ; or

(*e*) A Medical Officer of Health who is also a Teacher in the Department of Public Health in a recognised Medical School.

(*f*) A Sanitary Staff Officer of the Royal Army Medical Corps having charge of an Army Corps, District, Command, or Division recognised for the purpose by the General Medical Council.

4. After obtaining a medical qualification he must have attended for three months at least twice weekly the practice of a Hospital for Infectious Diseases, at which he has received instruction in the methods of administration.

The examination consists of two parts. The first part includes—(*a*) Laboratory work, with Chemistry and Bacteriology ; (*b*) Physics and Meteorology.

The Second Examination embraces—(*a*) Report on premises visited ; (*b*) Examination at Fever Hospital ; (*c*) Examination at Public Abattoir ; (*d*) Epidemiology and Endemiology ; (*e*) Vital Statistics and Sanitary Law ; (*f*) Practical Sanitation.

Each examination is held bi-annually, in October and May. The fee for each is £6, 6s. ; for re-examination, £3, 3s. Fees and applications to be lodged with Mr. James Robertson, 54 George Square, Edinburgh ; or with Mr. Alex. Duncan, LL.D., 242 St. Vincent Street, Glasgow.

Membership and Fellowship of the Royal College of Physicians, Edinburgh.

Every applicant for the *Membership* must possess a recognised qualification, and be not less than twenty-four years of age. He must pass an examination on Medicine and Therapeutics, on Clinical Medicine, and on some Special Department of Medicine, such as Psychological Medicine, General Pathology and Morbid Anatomy, Medical Jurisprudence, Public Health, Midwifery, Diseases of Women, Diseases of Children, Tropical Medicine, etc. The Membership is conferred by election.

The fee for the Membership is thirty-five guineas, except the applicant be a Licentiate of the College, when it is twenty guineas.

Members of not less than three years' standing may be raised by election to the *Fellowship*, the fee being thirty-eight guineas, exclusive of Stamp Duty of £25.

Fellowship of the Royal College of Surgeons, Edinburgh.

Every candidate must be twenty-five years of age, and must have been engaged for two years in the practice of his profession, after having obtained

a recognised qualification in Surgery. The petition for examination must be signed by two Fellows—a proposer and seconder.

The candidate must pass an examination on Principles and Practice of Surgery, including Surgical Anatomy, Clinical Surgery, and any one of the optional subjects; Ophthalmic Surgery, Aural, Nasal and Laryngeal Surgery, Dental Surgery, Surgical Pathology and Operative Surgery, Gynæcology, Advanced Midwifery with Obstetric Surgery, Advanced Anatomy.

The fee is £45, except the candidate be a Licentiate of the College, when the fee is £35. Further particulars may be obtained from the Clerk to the College, 54 George Square, Edinburgh.

Fellowship of the Royal Faculty of Physicians and Surgeons of Glasgow.

Every candidate must have been qualified for two years, and be aged twenty-four. Admission to the Fellowship is by examination and subsequent election. The candidate is examined on either (*a*) Medicine (including Clinical Medicine, Medical Pathology, and Therapeutics), or (*b*) Surgery (including Clinical Surgery, Operative Surgery, Surgical Anatomy, and Surgical Pathology); and on one optional subject—Anatomy, Physiology, Pathology, Midwifery, Diseases of Women, Medical Jurisprudence, Ophthalmic Surgery, Aural, Laryngeal and Nasal Surgery, Dental Surgery, State Medicine, Psychological Medicine or Dermatology.

The fee is £30, except the candidate be a Licentiate of the Faculty, when it is £15.

The Fellowship Diploma is now open to Women.

MEDICAL EDUCATION OF WOMEN IN EDINBURGH.

School of Medicine for Women, Surgeons' Hall.

The courses of instruction given in this School qualify for graduation in Medicine. The curriculum and class fees are the same as for male students proceeding to the University Degree or College Qualification respectively. Clinical tuition is provided in the Royal Infirmary and Sick Children's Hospital.

The prospectus of the College, and any information regarding the medical education of women in Edinburgh, may be obtained from the Secretary, Dean's Office, School of Medicine for Women, Surgeons' Hall, Edinburgh.

POST-GRADUATION STUDY.

The different University Laboratories provide facilities for research work. In most cases no fees are charged, but those engaged in research work are expected to defray the expense of materials. The Laboratory of the Royal College of Physicians of Edinburgh is splendidly equipped for the carrying out of all branches of medical research. It is available for research work to Members and Fellows of the Royal Colleges of Edinburgh and to other applicants approved by the Council of the Royal College of Physicians. No fees are charged, and the ordinary reagents, etc., are provided. By arrangement with the Superintendent, workers may have the assistance of members of the Laboratory Staff. Special post-graduate courses may be arranged.

EDINBURGH POST-GRADUATE COURSES IN MEDICINE.

These courses, which are held during the Summer Vacation, are arranged by a Committee appointed by the University and School of the Royal Colleges. The programme for 1914 has not yet been drawn up, but will no doubt be somewhat similar to that for 1913, which was as follows :—

July:—A series of classes dealing with *Diseases of Children* was arranged for during the last fortnight of the month.

August:—A Four Weeks' Course on *Internal Medicine.* This included series of clinics upon diseases of the various systems, in addition to classes upon Applied Anatomy, Hæmatology, Bacteriology and the Examination of the Heart, Urine and Digestive Products and Nervous System, X-Ray Diagnosis and Electrical Treatment, and the Medical Aspects of Morbid Pregnancy. Between six and seven hours' instruction daily. Attendance limited to twenty-five. *Fee*, Ten Guineas.

September:—A Four Weeks' *General Course.* Each fortnight was quite independent and might be taken separately. This included Medical and Surgical Clinics, Clinical Neurology, Dermatology, Fevers, Ophthalmology, Pediatrics, Infant Feeding, Applied Anatomy, Morbid Anatomy, Pathological Histology, etc. *Fee*, Five Guineas for the month or Three Guineas for either fortnight. A series of lectures upon subjects of general interest was given in connection with the course. These lectures were open to all practitioners.

A Four Weeks' *Surgical Course* included Surgical Clinics, Applied Anatomy, Surgical Pathology, Operative Surgery, etc. Attendance limited to twenty-five. *Fee*, Ten Guineas.

A Special Surgical Course on the *Genito-Urinary Tract. Fee*, Six Guineas.

A Course on the *Ear, Nose, and Throat* included classes on the pathology of this subject and operative work in addition to demonstrations on the methods of examination, clinics, etc. *Fee*, Ten Guineas.

A *Series of Classes*, the entries for which were limited, upon Hæmatology, Bacteriology, X-Rays, Gynecology, Gynecological Pathology, Ophthalmoscopy, Errors of Refraction, Ear, Nose, and Throat, Histological Methods, etc. These classes were open only to those who had entered for the General, Surgical, or Ear, Nose and Throat courses, on payment of an Additional Guinea in each instance.

In addition to these courses the classes throughout the year on Bacteriology, Diseases of the Blood, Diseases of the Tropics, Neurology, etc., are attended by a number of graduates.

Particulars of these classes are to be had from the Secretary, The New University.

GLASGOW ROYAL INFIRMARY AUTUMN POST-GRADUATE CLASSES.

These include Demonstrations on Diseases and Injuries of the Eye, Surgical Diseases of the Kidneys and Bladder, Clinical Medicine, Clinical Surgery, Diseases of the Ear, Diseases of Throat and Nose, Hæmatology, Gynecology, Practical Pathology and Bacteriology.

Those desirous of attending any of the classes are requested to communicate with Dr. Thom, Superintendent, Royal Infirmary, from whom a syllabus may be obtained.

EDINBURGH
MEDICAL JOURNAL.

EDITORIAL NOTES.

Clinical Teaching in London.

THE sections of the London University Commission Report * dealing with clinical teaching, although they bear on the system in London, must attract attention in other medical schools, and at the present time are of especial interest to Edinburgh. The Report is a comprehensive document, and we need not discuss details arising out of the peculiarities of the metropolitan schools, or the financial question: the general principles, being of wider applicability, merit, however, fuller consideration. For the sake of clearness we first summarise the Commission's conclusions: thereafter the arguments which led to their formulation will be noticed.

The Commission finds (1) That the standard of teachers of clinical subjects ought to be the same as that of other university professors: it is therefore necessary to appoint and pay clinical professors who will devote most of their time to teaching and research. (2) The complexity of medicine and its dependence on other branches of science necessitates its co-operation with the latter, and the creation of a professional department for research and for affording scientific instruction. (3) The organisation known as a "hospital unit" is adapted for this purpose. (4) The English system of clerking and dressing is indispensable: for scientific instruction the clinical demonstration is of great value.

Taking first the opening sentence of these conclusions, we frequently meet in the Report such phrases as "university standard of teaching," and implicit or explicit statements that in some respects clinical teaching falls below that standard. To discover what the Commissioners understand by university education we turn to the beginning of the Report. Broadly, it differs from the purely technical training for a craft or profession in that it is not primarily utilitarian, but aims at developing the intellect, and at leading the student to knowledge for its own sake. Although most undergraduates, admittedly, follow their university study for utilitarian ends, the education afforded has a much wider scope. Here, at once, is an apparent conflict with the method underlying some of the changes which have already been made in clinical teaching, because the main line of reform, hitherto, has been

* Final Report of the Royal Commission on University Education in London. London: H.M. Stationery Office, 1913.

toward giving more clinical work, so as to turn out more practical men. From the university standpoint, however, this is to begin at the wrong end: the whole quality of clinical work, not the mere quantity of practical instruction, requires to be raised.

Academic training aims at the formation of a scientific habit of thought: at accustoming the student to balance issues, to judge impartially, to weigh evidence: at giving him insight into the conditions under which research is carried out. The university knows of no hard-and-fast line between undergraduate and post-graduate work. Teaching predominates in the former, research in the latter, and the professor takes part in both. The Report emphatically asserts that education of the best kind can only be given by a man whose first interests are teaching and research. Ability in the latter ranks equal with aptitude for teaching, for the student gains inestimably from contact with an original and independent mind. "Anyone," says Helmholtz, "who has once come into contact with one or more men of the first rank must have had his whole mental standard altered for the rest of his life." The university standard, then, implies knowledge for its own sake, imparted by men who have acquired it at first hand, and who can inspire students to follow truth in their daily work.

No university in this country has adopted this standard by making it a condition that the holder of a clinical chair shall devote most of his energy to teaching and research, or even by affording him adequate facilities for his work. Many great and stimulating teachers there have been, but clinical instruction has for the most part been in the hands of men whose necessary interests were in the practice of their profession. It is not suggested that in the present system clinicians neglect laboratory methods of diagnosis and treatment, but it is insisted that a higher degree of co-operation is essential, and that instead of a teacher utilising scientific methods only as an aid in practice, and teaching students on the basis of existing knowledge, he must be the controlling and directing member of a group of subordinate scientific specialists attacking the problems of disease.

If a clinician becomes a university professor in the sense indicated, the rest follows. Like other professors he requires his department—the hospital unit—wholly or largely under academic control. The idea of a hospital unit involves a fundamental change in the popular habit of mind. Medical men know that patients are best served in hospitals where active teaching goes on, and under the unit system the sick would continue to gain even more than at present. To look on hospitals simply as places for healing and relief is, as Mr. A. J. Balfour said the other day, a very small and narrow view to take, and Sir William Osler in his evidence spoke of the "threefold function" of the hospital. A typical medical unit, as described by Professor Osler,

comprises (1) the director: (2) 60 or more beds: (3) laboratories for (*a*) cardio-respiratory physics and physiology, (*b*) bacteriology and vaccine therapy, (*c*) chemistry, (*d*) microscopy, (*e*) X-ray and electrical work, (*f*) students' general work: (4) an out-patient department: (5) a staff of (*a*) three permanent senior assistants, and (*b*) junior assistants—house physicians—appointed annually.

The clinical demonstrations referred to in the fourth conclusion are systematic attempts to illustrate the various phases of a disease by collecting together patients, records, specimens, reports, etc. The preparation for elaborate demonstrations of this nature imperatively demands an adequate staff. Strongly as the Report urges the need for thorough-going re-organisation of clinical teaching on a higher basis, it equally insists on the paramount importance of retaining the system of clerks and dressers.

Assuming such clinical professors appointed, their private practice must necessarily be restricted, but should not be completely barred. If the right men hold the chairs the demands of teaching and the claims of hospital and research work will in themselves limit the time available for practice. Further than this the Report does not go.

Such being its main contentions, it may be admitted that the Report bears throughout the impress of Mr. Flexner's evidence. The conclusions have been freely criticised, and we agree that Mr. Flexner overlooked the good points in the English system. The fact is, as Professor Starling points out, that only the excellence of the technical training in London and the high character and attainments of the teachers have preserved a system which is in essence a direct descendant of apprenticeship. The traditional method works so well that those who know it alone may be pardoned for doubting the virtues of the new.

But, granted the premisses as to what university education means, the conclusion cannot be avoided that, if clinical medicine is to rank along with other branches of science in its progress at the hands of this and the next generation, some such reform must come. Nor can it be charged against the Report that it throws over English for American or German methods, for what is distinctively British is incorporated in the scheme.

"An Appreciation of Joseph Bell."

After making due allowance for the natural enthusiasm begotten of old friendship and grateful affection, we can readily accept Mrs. Jessie M. E. Saxby's "appreciation" of Mr. Joseph Bell* as a frank

* *Joseph Bell: An Appreciation by an Old Friend.* Edinburgh: Oliphant, Anderson & Ferrier, 1913. Price 3s. 6d.

and fair estimate of his remarkable personality and of the almost unique position he held as a professional man and as a citizen of Edinburgh.

We confess we had never taken Conan Doyle's reference to Mr. Bell as the prototype of *Sherlock Holmes* so literally as Mrs. Saxby has done, nor do we believe that the world at large ever looked upon, or was intended to look upon, our esteemed predecessor as a "callous man-hunter, tracking a criminal with cool and sleuth-hound persistency." No pupil of Mr. Bell's could so far misread his character, and we have always considered Sir Arthur Conan Doyle's suggestion as nothing more than a graceful and generous compliment paid by a loyal student to his old "chief."

There is also, we think, room for doubt as to whether Mr. Bell resented the suggestion so seriously as Mrs Saxby would have us believe. With his other gifts he possessed the saving grace of a sense of humour, and this, if nothing else, would have saved him from such a false position.

Endowed with a quick-acting brain and an unusual fund of sound common-sense, Mr. Bell had cultivated his powers of observation to an unusual extent, and he found an intellectual pleasure in bringing his powers of deduction to bear upon his daily work. If he took a certain amount of pride in his gifts, those who had the privilege of following him in the Infirmary must concede that his pride was justifiable. They will also be the first to admit that his primary object in exercising his powers of observation and deduction before his pupils was the desire to stimulate them to cultivate their own capacities in these directions. The practice is not without its risks, and it must be confessed that even in Mr. Bell's theatre the incidents did not always go off with the crispness of those cited by Mrs. Saxby; but there was still left to admire the readiness with which a plausible explanation of the hitch could be found, or the missing link in the chain of evidence supplied. When all is said, however, it cannot be denied that "the vast importance of little distinctions and the endless significance of trifles" must be impressed upon students of medicine, and that no teacher of our day was more successful in illustrating the practical value of noticing and interpreting apparently trifling distinctions than Mr. Bell. We should be sorry to have to dissociate Joseph Bell from Sherlock Holmes.

Mrs. Saxby's "appreciation" is none the less welcome to us in that it deals only indirectly with Mr. Bell's professional work. We value it for the many sidelights it throws on his life and character. His interest in church work and ecclesiastical politics, his tendencies in art and general literature, his attitude towards the political movements of his times, the courage with which he faced the great sorrows of his life, his devotion to work, tempered with a longing for "the rest of the everlasting hills" and for the joy of being among his

flowers, reveal to us some of the less familiar traits in a remarkable personality.

Edinburgh University Medical Year-Book.

THE success of the *Edinburgh University Medical Year-Book* reflects great credit upon Mr. Duncan C. L. Fitzwilliams, who, with commendable zeal and loyalty to his Alma Mater, has carried out the arduous task of compiling and editing it since its inception three years ago. The issue for 1913 shows a marked advance on its predecessors, and will be welcomed by Edinburgh graduates wherever they may be located. A cursory glance through the directory of Edinburgh graduates and the supplementary local list shows how widely the alumni of our University are scattered. From the interesting report contributed by the Dean of the Faculty of Medicine we learn that in the year 1912, of the 1330 medical undergraduates in the University 591 belonged to Scotland, 228 were from England and Wales, 95 from Ireland, 265 from British dominions, 102 from India, and 49 from foreign countries. During the year, 205 passed the final examination and graduated M.B., Ch.B.—a considerable increase over the previous year. Those who have been away from Edinburgh for some years will be interested in the various reports of societies, athletic clubs, etc., and they will welcome the excellent series of photographs of teachers, including the late Professor Annandale, the late Dr. G. A. Gibson, Professor F. M. Caird, and Professor Lorrain Smith. Professor Caird's article on Lord Lister will revive in the memories of what must now be looked upon as the older generation of graduates many pleasant recollections of the days they spent in his wards in the early days of the great surgical revolution.

The *Year-Book* is now an established institution, and we trust that Edinburgh graduates will respond to the appeal of the editor to assist him in making it even more complete than it at present is.

Honours.

THE King has been pleased to confer the honour of knighthood on E. A. Schäfer, Esq., F.R.S. We offer our sincere congratulations to Professor Schäfer.

We have also great pleasure in recording that at the Thirty-Fifth Annual Congress of the American Laryngological Association, held at Washington on 5th May, Dr. A. Logan Turner was elected a Corresponding Member of the Association. This distinction is very carefully guarded by the Association, and it is particularly gratifying that a member of the Edinburgh School, and, we may be allowed to add, a valued member of the staff of the *Journal*, should have been selected for the honour.

King Edward VII. Foundation.

The Council of the King Edward VII. British-German Foundation, instituted by Sir Ernest Cassel, have decided to award a certain number of studentships to young men of British nationality, to enable them to prosecute special studies in Germany after the completion of their studies at one of the British Universities. The studentships are for one year, and of the value of £175, and a condition of their tenure is continuous residence in Germany for this period. Seven appointments have been made this year, of which two have been secured by Edinburgh graduates—Mr. R. S. Wishart, M.A., B.Sc., in chemical research; and Mr. A. Cowe, in neurology and gynecology. The grants are not limited to students pursuing scientific research, the other subjects encouraged this year being classical history, statistics and economics, scientific research in vapour pressures, and the higher branches of journalism.

Complimentary Dinner to Dr. Alice Hutchison.

On June 20th a complimentary dinner was given to Dr. Alice Hutchison, on the occasion of her return from Bulgaria. Dr. Hutchison left this country in the beginning of November as one of three women doctors attached to the Women's Sick and Wounded Convoy Corps. On arriving at Sofia, they were advised to proceed further south, and accordingly the corps trekked in bullock carts to Kirk Kilisse, where they established their hospital, Dr. Hutchison acting as Principal Medical Officer. The work of the hospital gave so much satisfaction to the Bulgarian authorities that when the Women's Convoy Corps returned to London in January the three medical women were asked to stay on under the Bulgarian Red Cross. They were then sent to take charge of half of the 4th Base Hospital, which previously had been accommodated in scattered houses in the town, but which at this point was transferred to the block outside the town which had just been vacated by the British Red Cross Mission. In the end of April Dr. Hutchison and her colleagues were transferred to a field hospital at Ouzoun-Keupreu, south of Adrianople, where they worked until they resigned in order to return to this country.

At the dinner Dr. Hutchison gave an interesting account of her experiences and impressions, which was listened to with all the more interest that this was the first occasion on which a medical woman had taken full charge of a military hospital in time of war.

Among the new Fellows admitted to the Royal College of Surgeons of England on 12th June were Harold Holkar Broome, Capt. I.M.S., M.B.(Edin.) (1898); and William Gemmill, M.A., M.B., Ch.B.(Edin.) (1905), late Demonstrator of Anatomy in the University of Edinburgh.

FIBROMATOSIS OF THE STOMACH AND ITS RELATIONSHIPS TO ULCER AND TO CANCER.*†

By ALEXIS THOMSON, Professor of Surgery,
and
JAMES M. GRAHAM, Assistant to the Professor of Surgery,
University of Edinburgh.

WE propose in this paper to give a general account of the condition known as fibromatosis of the stomach—the lesion which is most often mistaken for cancer.

We have chosen the term "fibromatosis" because it expresses the most striking feature of the lesion without suggesting any view as to its nature or etiology. From the fact that we have always found this lesion associated with ulcer, the term "ulcer-fibromatosis" would probably be more accurate.

Although the condition has been known for the greater part of a century, there have always been, and there still are, the most widely divergent views as to its nature. Cruveilhier felt sure of his ground, for his paper, published in 1835, was entitled "Innocent Hypertrophy of the Pylorus." English authors, notably Brinton, who described the condition under the name "cirrhosis of the stomach" or "linitis plastica," and Handfield Jones, who employed the term "fibroid induration of the stomach," had also no doubt, it would appear, of the innocent nature of the affection. With the advent of more accurate methods of histological examination, in which German pathologists played a prominent part, there arose a confident and apparently unanimous opinion that Cruveilhier's innocent hypertrophy and Brinton's cirrhosis represented an atypical form of carcinoma.

We have been fortunate in acquiring a number of specimens in a good state of preservation, chiefly derived from our own clinique, but largely augmented from those of our colleagues, and we are specially indebted to Professor Caird for generously placing a number of the specimens from his collection at our disposal. Our material consists of the following specimens almost exclusively obtained from the operating theatre:—

Fibromatosis	9
Fibromatosis with ulcer-cancer . .	5
Tuberculosis with cancer . . .	1
Cancer specimens specially selected for examination	35

* From the Surgical Department, University of Edinburgh.

† Read before the American Surgical Association at Washington, D.C., May 1913.

We do not mean to imply, because our investigations have been carried out on a larger scale than was available to those who have preceded us in this inquiry, that we have reached anything like finality on the subject, but we claim to have made a number of reliable observations. We use the word reliable with confidence, because in the examination of the more difficult specimens we have had the advice of two expert pathologists, Dr. James Ritchie, Superintendent of the Laboratory of the Royal College of Physicians, and Mr. Richard Muir of the Pathological Department of the University of Edinburgh. We are also indebted to Mr. Pirie Watson, M.B., and Mr. R. C. Alexander, M.B., Assistants in the Surgical Department, and to Mr. Frank Pettigrew, technical assistant in the same department, for many of the illustrations.

We believe that we are in a position to clear up, in some measure, the long-standing controversy as to whether fibromatosis of the stomach is innocent or malignant. We have found that in some cases it is innocent, while in others it is associated with cancer. The controversy owes its origin to the fact that there occurs in the stomach a diffuse infiltrating form of scirrhous cancer which, in its distribution, resembles fibromatosis; it differs so much in naked-eye and microscopic appearances from the classical forms of gastric carcinoma that its true character is not capable of being established without a thorough histological examination. The controversy has also been kept alive by the fact that when cancer involves a stomach that is already the seat of fibromatosis, the evidence of its presence in the stomach is not always easy to find, although it is readily discovered in the associated lymph glands.

Our material was prepared as follows:—The resected portion of the stomach was fixed in Joré's fluid, and embedded in paraffin, after which complete sections were cut, stained for the most part in hæmatoxylin and eosin, and mounted for examination under a low power of magnification. These large sections enabled us to study the distribution of the disease and the gross changes in the different coats of the stomach at different levels. Small portions of tissue selected from different parts of the specimen were cut and stained for examination with higher powers, that we might observe the nature of the cellular elements and the minute changes in the tissues.

Fibromatosis of the Stomach.

The condition of fibromatosis may be limited to a portion of the stomach—the localised form, or it may extend throughout the

entire stomach—the diffuse form. The localised form is not only the more frequent, but it is the form which, from the clinical point of view, is the more important to differentiate from cancer.

The Localised Form of Gastric Fibromatosis nearly always commences in the vicinity of the pylorus and spreads from there towards the cardia, usually, but not always, showing a preference for the lesser curvature.

External Appearances.—There is a sharp contrast between the affected pyloric portion and the rest of the stomach; the latter is flaccid and collapses readily, whereas the affected portion is rigid, and densely hard, like gristle. The peritoneal surface, if free from adhesions when viewed in the living subject, is white, pearly, and smooth. While this external appearance resembles cancer, it may be said that fibromatosis forms a flattened, smooth-surfaced tumour (Fig. 1), whereas a cancerous tumour tends to be more rounded in shape, and is often nodular on the surface. This distinction, however, is so general that it cannot be depended upon. There is an absence of the cicatricial contraction that is so common a sequel of uncomplicated chronic ulcer, and there is no suggestion of cicatricial stenosis of the pylorus or of hour-glass contraction of the body of the stomach.

The glands along the curvatures, especially the lesser, are usually enlarged and firmer than normal, again suggesting cancer, but there is a greater tendency for them to retain their normal shape than is usual when they are infected with malignant disease. It goes without saying that we are not here considering advanced cases of malignant disease in which the appearances of the stomach and of the adjacent parts render the nature of the condition unmistakable.

Reference should be made to those cases of fibromatosis in which, when the abdomen is opened, the pyloric end of the stomach is found to be so buried in adhesions, matting it to the surrounding organs and to the omenta, and it may be also to the parietal peritoneum, that a satisfactory examination of the stomach is impossible. We believe that these represent the type of case in which either nothing can be done in the way of a curative operation, or at the most a palliative gastro-enterostomy or jejunostomy, and the patient, in spite of a gloomy prognosis, makes an unexpected and permanent recovery.

Changes in the Coats and in the Interior of the Stomach.—The pyloric portion of the stomach is converted into a rigid, funnel-shaped tube, the lumen of which is greatly contracted (Figs. 2

and 5). The increase in the thickness of its wall is remarkable; in some of our specimens it measures 2·5 cms.

In the majority of the specimens we have examined (7 out of 9) there is situated, in about the centre of the affected area, a deeply-punched-out ulcer; the surrounding mucosa, instead of being as soft as velvet, freely movable on the subjacent coats, and showing prominent rugæ, is firm and unyielding, is closely adherent to the submucosa, and presents a hillocky surface, corresponding to variations in thickness of the fibromatosis in the submucous coat (Fig. 3). The altered appearance of the interior stops abruptly at the pyloric ring, while towards the cardia it gradually merges into the normal, in other words, there is no ridge at its margin. In the case of Mrs. Miller (Fig. 4) the appearances are especially characteristic. There is a large deep ulcer occupying the greater curvature about three inches from the pyloric ring; in the area of the ulcer all the coats have disappeared, its floor being formed by a layer of dense scar tissue; while over the fibromatosis in the submucosa, which extends round the remainder of the circumference, the mucosa is adherent and undulating, and appears thicker than normal. In two of our specimens there is no visible punched-out ulcer, but the mucosa over the submucous fibromatosis presents a smooth atrophied appearance (Fig. 3), which microscopical examination shows to be due to a superficial form of ulceration combined with fibrosis. The undulating hillocky appearance of the interior of the stomach is sometimes exaggerated, so that there are eminences separated by deep clefts; the mucosa then presents a polypoidal appearance, and we think it is probable that some of the specimens described in the literature and in museum catalogues as "polyposis of the stomach" may be examples of fibromatosis of the submucous coat, in which the contraction of the newly-formed fibrous tissue has caused the mucosa to project in the shape of polypoidal masses into the interior of the stomach.

The Presence of Ulcers and of Ulceration.—We devoted special attention to the condition of the mucosa of the stomach, as we early suspected that a breach of surface of the mucosa would prove to be an antecedent of fibromatosis. We should like to restrict the term "ulcer" to the well-known punched-out defect in the coats of the stomach, easily seen with the naked eye, and employ the term "ulceration or erosion" when the mucosa looks thin and wasted, and microscopical examination shows a partial disappearance of the glandular elements on the

free surface, associated with chronic inflammatory changes in the interstitial tissue.

In nine specimens of fibromatosis limited to a portion of the stomach no fewer than seven showed a visible punched-out ulcer, situated, roughly speaking, in the centre of the affected area: in the remaining two specimens there was superficial ulceration over the greater part of the affected area. In the majority of cases the punched-out ulcer had spread through all the coats of the stomach.

The Submucosa.—From being a thin, loose layer of areolar tissue supporting the larger blood-vessels and allowing the mucosa to move freely on the muscularis, the submucosa is converted into a thick, solid, tough, white tissue, not so dense as keloid, but resembling the consistence of a hard fibroma. It varies in thickness from 0·2 cm. to 1·2 cm. in different specimens and in different parts of the same specimen; in some cases it constitutes $\frac{5}{6}$ths of the entire thickness of the gastric wall. On the cardiac side the fibromatosis tapers off gradually; on the pyloric side it stops abruptly, usually at the pyloro-duodenal junction (Figs. 5 and 6).

There is no difficulty in differentiating the fibromatosis from the scar tissue that frequently accompanies chronic ulcer, for, unlike scar tissue, it is uniformly distributed throughout the submucous coat, whereas, when the coats of the stomach are replaced by scar tissue, all traces of the original arrangement are lost.

The Muscularis.—The muscularis is very commonly the seat of a *marked hypertrophy of the circular fibres*, this being a response to the increased strain upon the organ in forcing its contents through the narrowed pylorus. In the rare cases in which the pylorus is not involved by the fibromatosis this hypertrophy is absent. Hypertrophy of the circular fibres is usually sufficiently marked to be easily seen with the naked eye. The hypertrophy of the muscle is most marked near the pylorus, and tails off gradually towards the cardia.

More characteristic than the hypertrophy, however, is the *segmentation of the circular muscle*, which is divided up into bundles by partitions or septa of white fibrous tissue continuous with the fibrillated tissue of the submucosa. The brown colour of the muscle renders this segmentation very obvious to the eye. Hypertrophy of the circular muscular coat is a common accompaniment of cancerous obstruction at the pylorus, and it may be quite

as marked as in the stenosis due to fibromatosis, but, so far as we know, it never shows the same degree of segmentation, and we have therefore come to regard it as a characteristic feature of fibromatosis. There is rarely any change in the longitudinal bundles of muscle.

The *subserous and serous coats* are little altered as a rule, but in some cases they also are invaded by the fibromatosis, and become correspondingly thickened.

The Pylorus.—Narrowing of the pylorus is almost a constant accompaniment of fibromatosis, and it may reach an extreme degree (Fig. 1). It is chiefly due to the increase in thickness of the submucous coat, but it is also contributed to by the contraction of this coat, whereby the mucous membrane is projected into the lumen, often in the form of folds or polypoidal eminences. The function of the pylorus as a channel of exit for the gastric contents is further impaired by the unyielding character of the tissues forming its wall.

When the fibromatosis extends to the pyloro-duodenal junction, and this is looked at from the duodenal side, the mucosa is seen to project as a collar-like ridge, and the pyloric aperture is reduced to a narrow slit which presents variations according to the distribution of the lesion. As in the hypertrophic stenosis of infants, this appearance has been likened to that of the os uteri, but the comparison is less apt in the case of fibromatosis, as the opening rarely occupies the centre of the channel.

Microscopical Appearances. — These necessarily vary at different stages of the process.

Histological Changes in the Mucosa.—Reference has already been made to the invariable presence of a visible ulcer or of ulceration in the mucous membrane. We shall here describe the changes seen with the microscope. Many of the specimens show increase in thickness of the mucosa, sometimes amounting to three times the normal. Some of this thickening appears to be due to contraction of the submucous coat crowding the mucosa into a smaller area, but it is chiefly due to actual increase in the amount of the interstitial tissue (Figs. 9 and 10). In some specimens this interstitial change is very pronounced, a thick layer of chronic inflammatory tissue elements separating the secreting tubules from the muscularis mucosæ (Fig. 10). More frequently the new tissue separates the tubules from each other, compressing them and causing their gradual disappearance (Fig. 10).

In the progressive replacement of the tubules by young fibrous tissue there are appearances which might at first sight be mistaken for cancer; an attenuated tubule without a lumen may appear on transverse section like an alveolus filled with cancer cells, but further examination shows the continuity of the tubule with one opening on the surface, and, further, that all the epithelial elements are superficial to the muscularis mucosæ. Some tubules show cystic dilatation, others show remarkable elongation (Fig. 11). Although there is no evidence of active mitosis or of proliferation of the epithelial cells, the above changes might reasonably be regarded as pre-cancerous in nature.

The muscularis mucosæ is in some cases involved in the fibrosis, that is, the muscle fibres are separated by young fibrous tissue.

The cellular infiltration, which is the main cause of the thickness of the mucosa, is composed mainly of small lymphocytes and plasma cells, with, in addition, a large number of proliferated endothelial cells and fibroblasts in an early stage of development. Some large phagocytic mono-nucleated cells are also present. There are no polymorph leucocytes.

These chronic inflammatory changes in the mucosa are associated with ulceration on the free surface and loss of the covering columnar epithelium (Fig. 12). It is noteworthy that this superficial ulceration is less in evidence in those specimens in which there is a visible punched-out ulcer. In the case of Mrs. Miller, for example, in which there is a large chronic ulcer at the greater curvature, and a submucous fibromatosis in the remainder of the circumference of the stomach, the overlying mucous membrane is intact (Fig. 13). We feel warranted in making the inference from this observation that the changes seen in the mucosa in other specimens are primary in character. Were they secondary to, and a result of, the submucous fibromatosis, they would have occurred in the Miller specimen. Our view is that the changes in the mucosa, particularly the ulceration, are primary, and are followed by the fibromatosis in the submucosa.

Histological Changes in the Submucosa.—In the fully-developed condition the submucosa is represented by a thick uniform layer of fibrillated connective tissue. The fibres are not arranged on a fixed plan, as in a tendon, but, although in parts parallel, they mostly run in all directions as they do in a fibroma and in other forms of fibromatosis, *e.g.* neuro-fibromatosis (Figs. 14 and 15).

The connective tissue cells are scanty, and are flattened between the fibres. Here and there are collections of lymphocytes in the vicinity of the muscularis mucosæ. There are numerous well-formed blood-vessels, presumably belonging to the original submucosa, and in addition there are a number of capillaries, more than was to be expected in view of the bloodless condition of the tissue as seen with the naked eye (Fig. 13). There is a complete absence of endarteritis.

We are unable to confirm the observation that the fibrous elements of the submucosa undergo hyaline degeneration.

The Scar Tissue associated with ulcer, in contrast to fibromatosis, takes on more of the hæmatoxylin stain, the fibres do not present any regularity in their arrangement, the connective tissue cells are more numerous, and the tissue elements in the fully-evolved condition, both fibres and cells, are more closely packed and are less vascular (Fig. 16).

Histological Changes in the Muscularis.—The changes observed in the muscle are mainly those of hypertrophy. In the early stages of fibromatosis, separation of the muscle bundles is confined to the inner layers of the circular coat. In well-marked cases the fibromatosis extends throughout the circular coat, and may also affect the longitudinal coat, although never to the same degree. The condition might be described as a coarse cirrhosis in which the muscle bundles are separated by fibromatosis which is continuous with and of the same character as that in the submucosa (Fig. 17). At the same time small fasciculi and even individual muscle fibres are occasionally seen in the midst of the fibromatosis (Fig. 18). The muscle fibres show no signs of degeneration; they appear capable of functionating, and the only change observed is an increase in the number and in the length of the nuclei.

Cases of Fibromatosis Associated with Ulcer-Cancer.—The combination of ulcer-cancer with fibromatosis is especially difficult to identify without detailed microscopical examination. In Fig. 7, from one of Mr. Caird's specimens, the chronic ulcer, which is not well seen in the figure, is situated 6 cms. from the pyloric ring; on either side of it the coats of the stomach are invaded and in parts replaced by an actively growing spheroidal-celled cancer, while beyond the limits of the ulcer there is a well-marked fibromatosis of the submucous coat with hypertrophy and segmentation of the muscularis.

In one of our own cases there is superficial ulceration of nearly two-thirds of the circumference of the pyloric segment of the

stomach: in the remainder the mucosa is irregularly thickened, and at one point, only to be seen with the microscope, there is the earliest visible stage of the invasion of the submucous and muscular coats by a spheroidal-celled cancer. The fibromatosis is moderate in degree, and its distribution closely corresponds to the ulcerated area in the mucosa. In another of our cases there is a punched-out ulcer about one inch from the pyloric ring, the floor of which consists of a mass of scar tissue replacing all the coats. At the edge of the ulcer the scar tissue is being invaded by an extensive growth of cancer—a condition which is not appreciated by the naked eye—while beyond this there is a comparatively limited amount of fibromatosis.

In a fourth case there is an ulcer close to the pyloric ring, with marked fibromatosis both in the submucous and subserous coats, and an early adeno-carcinoma proceeding from the edge of the ulcer and invading the submucous and muscular coats.

In a fifth case (Fig. 8), for which we are indebted to Mr. Cathcart, there is in the centre of the fibromatosed area a deeply punched-out ulcer, which has eaten through all the coats. We failed to find evidence of cancer in the different portions of stomach submitted to microscopical examination, but this was readily found in an enlarged lymph gland, embedded in the fat of the lesser omentum.

The comment on this series of cases is that they all illustrate the same sequence of events. Following upon a chronic ulcer, attended with fibromatosis, there occurs an epithelial growth at the margin of the ulcer, and an invasion of the deeper coats of the stomach. It should be emphasised that, excepting the first of the five, there was nothing in the naked-eye appearances to suggest the presence of cancer.

Pathogenesis of Fibromatosis.

Gastric fibromatosis, in view of its selective and spreading characters, suggests an analogy with the fibromatosis of nerves—neuro-fibromatosis—but the analogy goes no further. We have examined the stomach from a case of generalised neuro-fibromatosis in our own collection, and we find that the submucosa is not appreciably altered, and that the fibromatosis mainly involves the nerves of the muscular and subserous coats.

We have not observed any features that would suggest the view advanced by some writers that the lesion is of syphilitic origin; there is no characteristic granulation tissue and there is

an entire absence of endarteritis, and in the cases in which we have had an opportunity of employing the Wassermann reaction the results have been negative. We do not mean to deny the occurrence of a gummatous lesion of the pyloric portion of the stomach, causing stenosis of the outlet, such as has been described by Bird of Melbourne (*Brit. Med. Journ.*, October 1910), but we have not met with the condition.

We are also disinclined to accept the view that fibromatosis is due to a tuberculous infection. We have had the opportunity of examining a specimen of Mr. Caird's which presents a combination of tuberculosis and cancer; the tuberculous granulation tissue, which shows typical giant-celled systems, is most abundant in the subserous coat (Fig. 19). The suggestion that fibromatosis represents an attenuated form of tuberculous infection, in the sense propounded by Poncet and other members of the Lyons school, is not supported by our observations.

The most widely-accepted view regarding the nature of the thickening in the submucous coat, which we have called a fibromatosis, is that it is really a form of *atrophic infiltrating scirrhous carcinoma* (Fig. 20). We would like to point out that we are familiar with this form of cancer in the stomach, and we recognise also that it may cause a diffuse thickening of the submucosa, which, to the naked eye, may be indistinguishable from the condition we call fibromatosis. The investigation of our material, in the light of this knowledge, enables us to affirm most positively that fibromatosis may occur without the presence of cancer.

The Association of Fibromatosis with Ulcer or Ulceration of the Mucosa.—Having succeeded, as we believe, in establishing fibromatosis as an innocent affection of the stomach, we shall now consider the conditions under which it occurs. The most striking association is that which exists between fibromatosis and ulcer or ulceration of the mucosa.

The apparently invariable association of fibromatosis with ulcer or ulceration of the mucosa raises the question, Is fibromatosis a primary change in the stomach or is it secondary to an antecedent lesion? We have never seen fibromatosis in a stomach that was otherwise normal. When fibromatosis is associated with a punched-out ulcer, the mucosa over the surrounding fibromatosis may be practically normal (Fig. 13). This would appear to warrant the inference that submucous fibromatosis is not the cause of the changes in the overlying mucosa, but that these precede the fibromatosis, and are probably related to it as cause and effect.

Three colour process enlargement of a saggital section of the prepyloric portion of the stomach and transverse colon from a pronounced case of ulcer-fibromatosis. There is a large chronic ulcer occupying the greater curvature of the stomach, in the area of which all the coats of the stomach are replaced by scar-tissue. In the upper half of the section, the mucosa is normal, except that it appears thickened from being "crowded" by the contraction of the enormously thickened submucosa. The transverse colon, which is adherent to the stomach, also shows a diffuse fibromatosis of the submucous coat.

[From a woman, Mrs. Miller, aged 37 ; the stomach and transverse colon were resected in the belief that the lesion was cancer on the 16th April 1909. She now enjoys good health.]

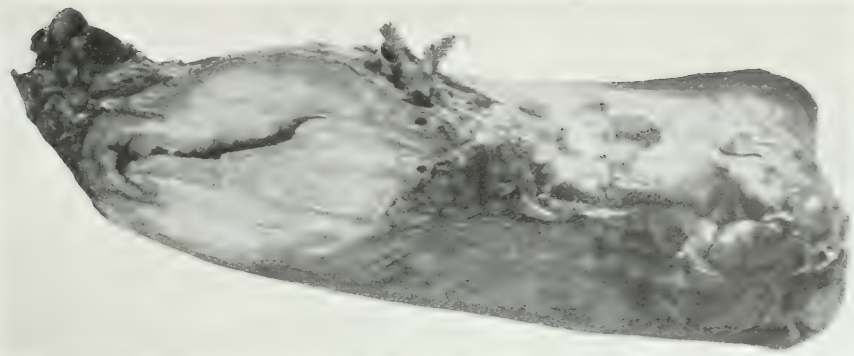

Fig. 1.—Fibromatosis of pyloric portion of stomach: some enlarged glands are seen along the lesser curvature.

Fig. 2. Fibromatosis of pyloric end of stomach, resected in the belief that it was cancer. Note the narrowing of the lumen and the peritoneal adhesions.

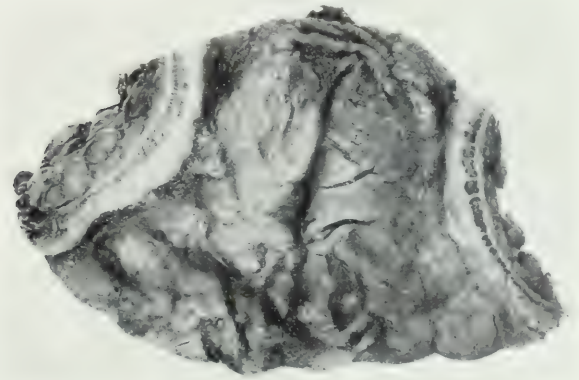

Fig. 3.—Fibromatosis of pyloric segment of stomach. The specimen has been laid open along the lesser curvature to show the hillocky surface of the mucosa, which is the seat of chronic superficial ulceration.

Fig. 4. Fibromatosis of the pre-pyloric portion of the stomach. There is a chronic ulcer at the greater curvature, and the fibromatosis has extended into the subserosa of the transverse colon.

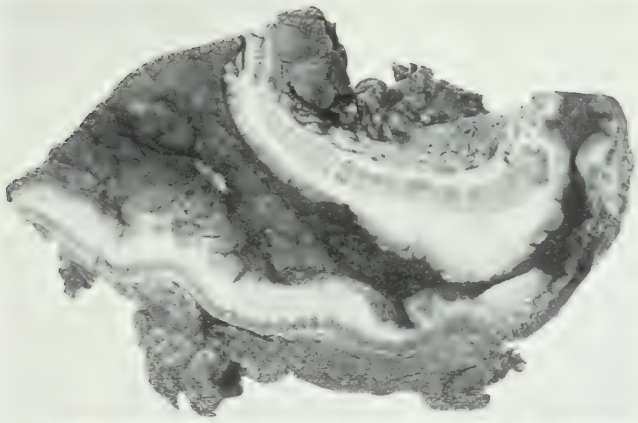

Fig. 5.—Fibromatosis of pyloric portion of stomach in coronal section, with the pylorus towards the right. (Mr. Scot Skirving's specimen.)

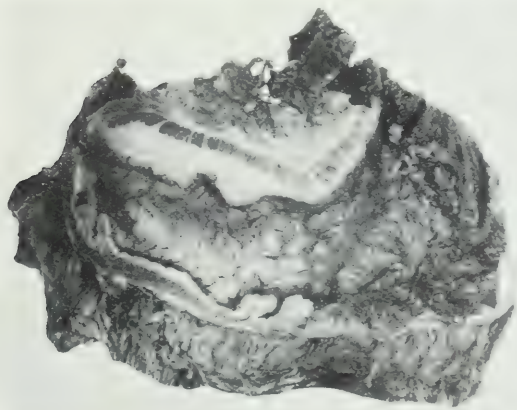

Fig. 6.—Fibromatosis of pyloric portion of stomach in coronal section, with the pylorus towards the left. The fibromatosis mainly follows the lesser curvature. (Mr. Caird's specimen.)

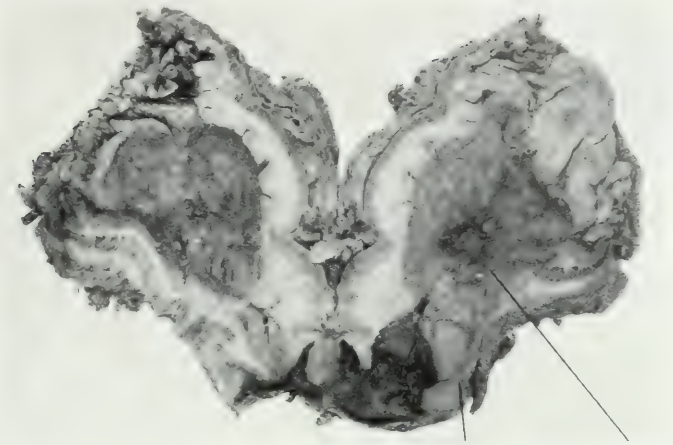

Fig. 7. *Ulcer-Cancer with Fibromatosis.*—The specimen is laid open along the lesser curvature. The ulcer is seen in the centre of the right half, and the cancer is most evident at the pyloric ring. The mucosa over the fibromatosis contrasts with the rugose mucosa beyond. (Mr. Caird's specimen.)

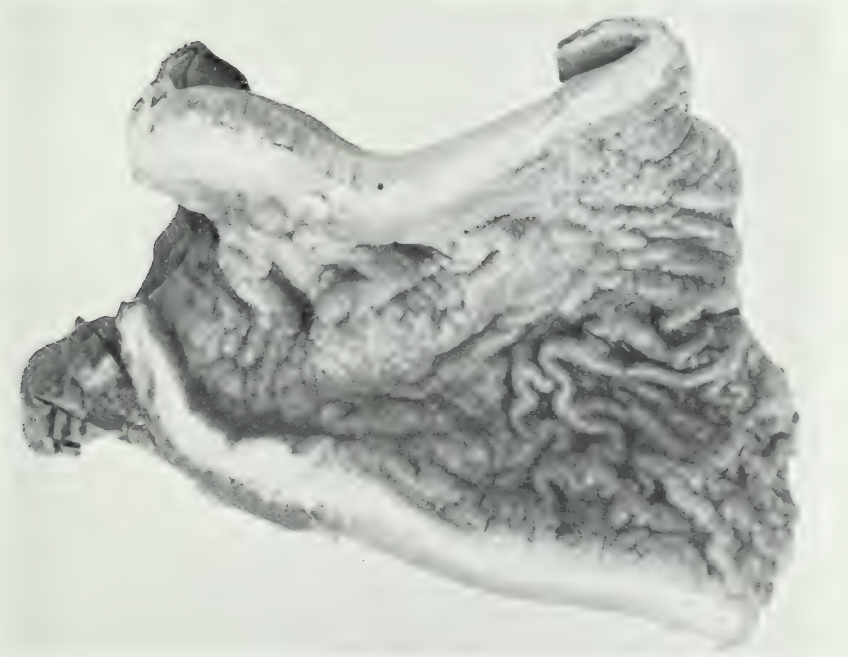

Fig. 8. *Ulcer-Cancer with Fibromatosis.*—The specimen is laid open from the front, and the pylorus is towards the left of the figure. There is a chronic ulcer in the centre of the fibromatosed area, and there was cancer in one of the glands in the lesser omentum. No cancer was found in the fibromatosed submucous coat. (Mr. Cathcart's specimen.)

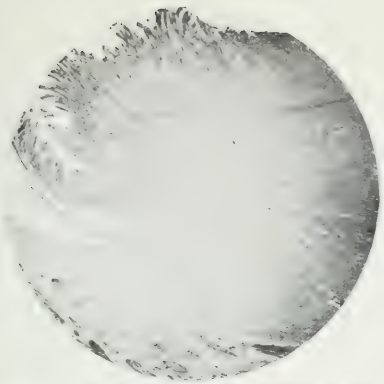

FIG. 9.—Section of gastric wall showing changes in the mucosa over fibromatosis of the submucous coat. The deeper parts of the tubules are compressed by increase of the interstitial tissue; chronic superficial ulceration is seen to the right; at the edge of the ulcer the mucosa is hypertrophied, and contrasts with the normal mucosa on the left of the figure. The muscularis mucosæ is distinctly seen separating the mucous from the submucous coat. (× 8.)

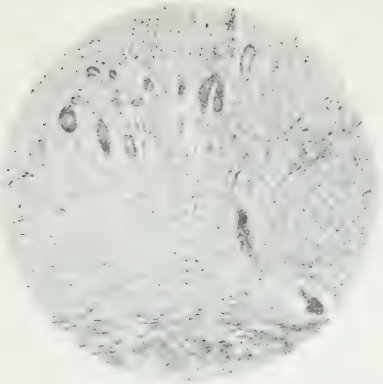

FIG. 10.—Showing replacement of gland tubules by young fibrous tissue in the deeper layer of the mucosa. The muscularis mucosæ is seen at the lowest part of the field. (× 75.)

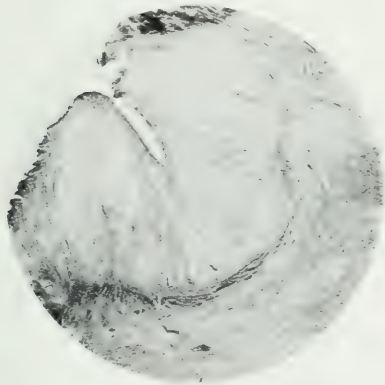

FIG. 11.—Great thickening and superficial ulcerations of the mucosa overlying the fibromatosis. The attenuated and elongated gland tubules are seen as wavy black lines; they are also greatly reduced in number. (× 13.)

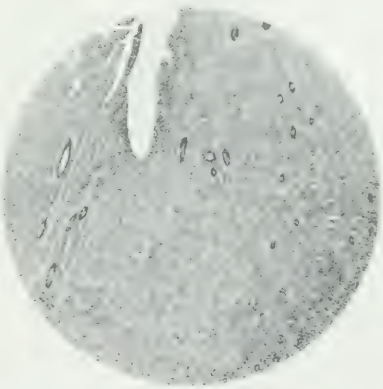

FIG. 12.—Showing almost complete replacement of the glandular elements of the mucosa and chronic superficial ulceration. (× 45.)

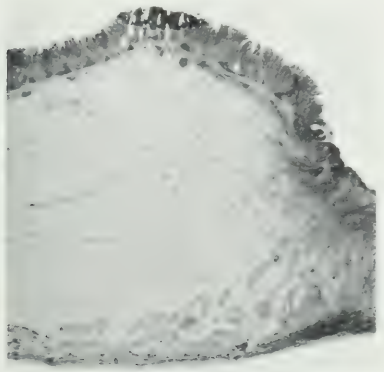

FIG. 13.—There is a pronounced fibromatosis of the submucous coat, and the overlying mucosa is normal. The edge of a chronic ulcer is seen on the right, and below, the muscular coat is seen to be thickened and

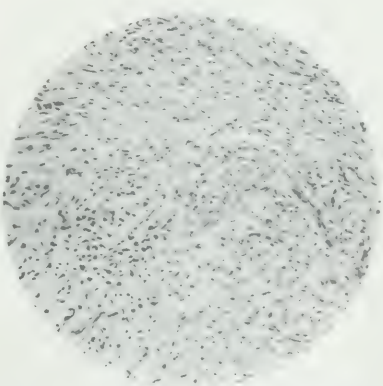

FIG. 14.—Showing an early stage of fibromatosis of the submucous coat before the formation of fully developed fibrous tissue. (× 200.)

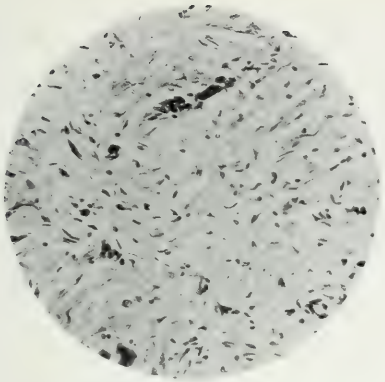

FIG. 15.—Fibromatosis of the submucous coat; the fibrous tissue is fully formed; a capillary is seen towards the upper part of the field. (× 200.)

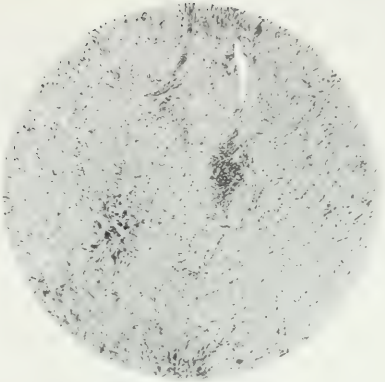

FIG. 16.—Scar-tissue from the floor of a chronic ulcer. (× 75.)

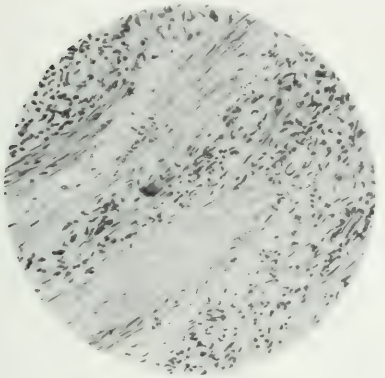

FIG. 17.—Showing the spread of fibromatosis to the circular muscular coat; the tissue is of the same nature as that in the submucosa, and shown in Fig. 14. (× 200).

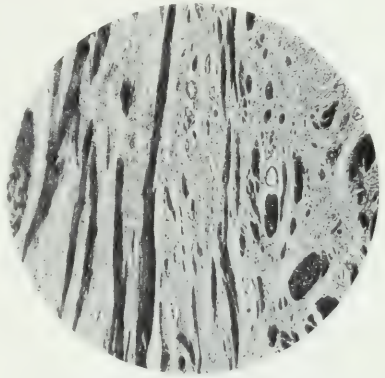

FIG. 18.—Circular muscular coat, showing all degrees of segmentation by extension of fibromatosis from mucosa; the muscle bundles are cut in different directions. (× 75.)

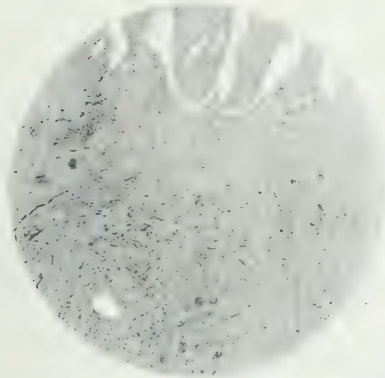

FIG. 19. *Chronic indurative thickening of the muscularis mucosæ*, showing great thickening of the subserous coat. Giant cells are seen towards the lower part of the field. The muscular coat is seen above. (× 60.)

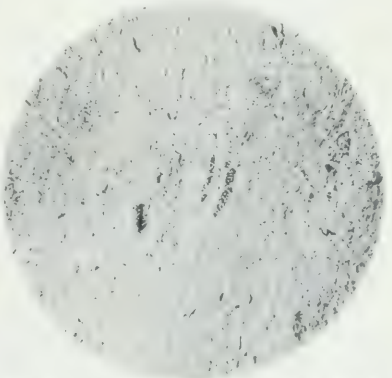

FIG. 20. Infiltrating scirrhous cancer in wall of stomach; small flattened alveoli filled with cancer cells are seen near the centre of the field. (× 60.)

In other words, the changes in the mucosa are primary and the submucous fibromatosis is secondary.

The lesion of the mucosa that is followed by fibromatosis is either a punched-out chronic ulcer or a chronic superficial ulceration. This naturally suggests that the necessary antecedent of fibromatosis is a breach of the surface which permits of the access to the subjacent submucosa of a toxin or irritant, to which the tissues of the submucosa react, and the reaction takes the form of a diffuse, spreading, new formation of young fibrous tissue. The diffusion or spread of the fibromatosis in the submucosa from its original seat of formation, its abrupt arrest at the pyloric ring, its extension mainly along the lesser curvature and into the muscularis between the bundles of circularly disposed muscular fibres, all agree in supporting the view that the irritant which causes fibromatosis is conveyed from its entrance to the parts which react to it by way of the lymphatics.

The capacity of spreading diffusely is one of the most suggestive features of fibromatosis, and is naturally one of the explanations of its having been regarded by many observers as an infective or malignant disease.

It is instructive to contrast fibromatosis with other forms of connective-tissue reactions resulting from irritants. It is obviously a form of "chronic inflammation," but it differs essentially from those which are familiarly known to us. Contrast it, for example, with the scar tissue in the floor and margin of a chronic ulcer. Scar tissue replaces the coats of the stomach; it shows no predilection for any one of them; it is confined to the immediate vicinity of the ulcer; and its naked-eye and microscopical appearances do not differ from those of scar tissue in any other tissue or organ of the body.

The same contrast holds good with the new formation of fibrous tissue in response to irritation, seen, for example, in chronic lesions of the gall-bladder or of the urinary bladder. There may be great thickening and induration of the wall of either viscus, but there is no selective fibromatosis of any particular coat.

It is also instructive to contrast fibromatosis with the well-known forms of chronic interstitial fibrosis or cirrhosis which occur, for example, in the liver or kidney. In these the new formation of fibrous tissue affects the whole connective tissue framework or stroma of the organ, and is diffuse from the outset, presumably because the irritant causing it is conveyed by the blood-stream; in gastric fibromatosis the new formation of fibrous

tissue commences in the vicinity of a breach of surface in the mucosa and selects the submucous coat, as if the irritant were slowly diffused along the lymphatics.

Considering the frequency of duodenal ulcer, it is remarkable that there is no record of fibromatosis similar to that met with in relation to gastric ulcer; this, together with the fact that duodenal ulcer is practically immune to the incidence of cancer, would suggest that there is some peculiarity in the pyloric portion of the stomach which renders it liable both to ulcer-fibromatosis and to ulcer-cancer.

Relationships of Fibromatosis to Cancer.—We have sufficiently elaborated the proposition that fibromatosis is not cancer, and we believe we have proved that it may occur apart from cancer. There remains, however, the important observation that the ulcer which is complicated by fibromatosis may also become the starting-point of cancer, and we have been able to record the details of five cases which illustrate this combination of lesions. Our observations suggest that the ulcer is the primary lesion, that the ulcer is followed by fibromatosis, and that, finally, a cancer originates at the edge of the ulcer. The epithelial proliferation, being walled in by the dense scar tissue around the ulcer and by the scarcely less dense fibromatosis in the surrounding submucosa, is greatly hindered and makes little headway—so little that it is difficult to recognise it except on careful microscopical examination. Cancer cells escape into the lymphatics from time to time, and when they have reached the adjacent lymph glands are identified in these more easily than in the primary focus.

The type of cancer is either an adeno-carcinoma or a spheroidal-celled cancer.

Clinical Features of Ulcer-Fibromatosis.—Inasmuch as fibromatosis is always a sequel of peptic ulcer or ulceration, the clinical features are practically those of ulcer, and they are influenced to a greater degree by the seat of the ulcer than by its association with fibromatosis. In the exceptional cases in which the pylorus is not involved the symptoms are inconclusive; indigestion and epigastric pain of some months' duration, such as would not have suggested operative interference but for the recognition of a palpable tumour, which was diagnosed as cancer. In the cases in which the pylorus was involved the symptoms were those of pyloric obstruction; and as in the majority there was an absence of free hydrochloric acid, along with a palpable tumour, the diagnosis of cancer was made with confidence.

Hæmorrhage was a prominent feature in only one case, although there was an ulcer or ulceration in all the cases. The discovery of a tumour in the epigastrium, sometimes made by the patient, occurred in a larger percentage of the cases than is usual in cases of ulcer uncomplicated by fibromatosis. The sexes were affected in approximately equal proportions.

The Recognition of the Nature of the Tumour when Exposed by Operation.—In the great majority of cases in which the abdomen is opened and a tumour of the pyloric segment of the stomach is rendered available for examination it is possible to make a reliable diagnosis as to its nature. The clinical history, the tests of the gastric functions, and the radiograph appearances, together with what one can see and feel, will enable the operator to come to a decision as to the nature of the lesion. And yet, with all these data to go upon, the operator has been wrong in his decision in no less than nine of the cases recorded in this paper. It is easy, in the light of after-events, to explain these diagnostic errors. The operator has been led to expect the existence of a pyloric carcinoma; on opening the abdomen he finds a tumour involving the pylorus, obstructing the pyloric outlet, spreading along the lesser curvature, and associated with enlargement of the lymph glands in the lesser omentum. He naturally regards the diagnosis of carcinoma as confirmed, and he proceeds to resect the stomach. Supposing, however, the operator has been deceived in previous cases and insists on immediate microscopical examination of a portion of the tumour or of one of the enlarged glands—the examination of one of the lymph glands is the most easily carried out and also the most instructive. If it is found to show cancer, no further doubt is possible, but, and this is our point, if cancer is not found, the question is by no means solved. A positive result is conclusive, but a negative one is of little value. The more we have studied this question of immediate microscopical examination the less are we prepared to rely upon it. In several of our specimens we have been obliged to cut sections from different parts of the tumour and from several of the enlarged glands related to it, and instead of the few minutes implied in the term "immediate microscopical examination," prolonged and repeated efforts were required before the question of innocence or malignancy could be decided with any approach to certainty. The suggestion that a surgeon should delay the important steps of the operation until he has been informed of the results of the histological investigation conveys a confidence

in rapid microscopical diagnosis which we regret we are unable to share.

Inspection of the interior of the stomach may help in a limited proportion of doubtful cases. A projecting cauliflower growth, for example, establishes the diagnosis of cancer; the absence of such a growth, however, does not exclude cancer. The discovery of a chronic ulcer, without infection of glands, would justify the operator in performing a limited resection instead of the radical operation for cancer.

Operative Treatment of Gastric Fibromatosis.—If we suppose that the condition has been correctly diagnosed and that the existence of cancer has been excluded, we advise that the affected portion of the stomach should be resected, because of the undoubted risk of cancer supervening.

Suppose, further, that it has not been possible to exclude the presence of cancer, and we believe that this is a more common condition of affairs, then again we say resect. A reasonable alternative, and one we have ourselves practised, especially in weakly patients, is to perform a gastro-enterostomy and at the same time remove several of the enlarged glands from the lesser curvature. If these show the presence of cancer the resection should be carried out after a suitable interval for recuperation. Further, if the disease, not diagnosed with certainty either as cancer or ulcer-fibromatosis, does not lend itself to radical operation, then relief to the symptoms should be afforded by gastro-enterostomy, and if this is impracticable, by jejunostomy. Eiselsberg records a case of fibromatosis of the pyloric segment treated by jejunostomy, and the patient was in good health six years after the operation.

The Diffuse Form of Gastric Fibromatosis or Leather-Bottle Stomach.—In the classical work by Brinton on diseases of the stomach it is taken for granted that the diffuse form of the lesion is, like the localised variety, innocent in character. We confess that at first we shared this opinion, but we now realise the unreliability of our observations owing to the imperfect preservation of the specimens of "leather-bottle" stomach in the University Museum. We have only been able to examine (and that through the kindness of Dr. Drennan) one fresh specimen of the lesion; sections taken from different parts of the stomach and from the glands show a diffuse form of carcinoma. We do not think the observations recorded up to now are sufficient to decide the question.

MYOTONIA ATROPHICA.

By EDWIN BRAMWELL and W. R. ADDIS.

MYOTONIA ATROPHICA has been adopted as a convenient designation for a group of cases characterised by myotonia, a symptom which constitutes the essential feature of myotonia congenita or Thomsen's disease, and by muscular atrophy. It is only within recent years that the association of these two symptoms has received recognition, and it is still uncertain whether these cases are to be classified as examples of Thomsen's disease in which the atrophy is symptomatic, or whether they are to be regarded as constituting a clinical entity distinct on the one hand from Thomsen's disease, and on the other from the myopathies which the muscular atrophy closely resembles both in its distribution and characters. It is proposed in the present communication to report four new cases and to describe the leading features of the condition. The bibliography has been very carefully prepared, and, with the exceptions noted, the original articles and reports of cases have been directly consulted.

CASE I.—S. H., male, aged 27, unmarried, was referred to one of us (E. B.) for an opinion by Dr. Railston Richardson in November 1912. His sister, who came to the hospital with him, informed us that the patient had always been a little peculiar mentally, and that when he left school at 14 he was only in the fourth standard. During the three following years he appears to have wandered about the country, working chiefly as a miner, but never staying for any length of time in one place. When 17 years of age he entered the Naval Reserve. While in the Service he says he was on several occasions treated in hospital for gastric trouble. A year or two after joining he had a fall from the rigging on to his head, and although the immediate consequences do not appear to have been serious, for he was not confined to bed, the weakness of the hands from which he now suffers was noted soon afterwards. After serving for two or three years he was discharged. His sister informed us that the reason for his dismissal, as shown by his discharge sheets, was "mental disease." Since his discharge he has been doing occasional work, though he has never retained a situation for more than two or three days at a time.

According to his sister's statement he is more irritable and obstinate than he used to be, and is at times difficult to manage. She has noticed, too, that he sometimes drops heavy articles from his hands, and that his speech is thicker than it used to be. These symptoms appear to have been present for several years. There is no history of venereal disease. The patient is a total abstainer.

Family History.—The patient is the youngest of a family of 13

His father died at the age of 65 (of ? liver disease), while his mother, aged 73, is alive and well. Both appear to have been healthy people, and, so far as can be ascertained, in no way peculiar. Two brothers are affected with similar symptoms. Their cases are recorded in the present paper. The ages of the various members of the family were obtained from the family Bible, and are as follows :—

W. H., m., born 1861, alive and well.
L. H., f., born 1863, alive and well.
C. H., f., born 1865, died at the age of 14, cause ?
J. H., m., born 1867, alive and well.
Jo. H., m., born 1869, died at the age of 14, cause ?
D. H., m., born 1871, died from an accident some years ago.
Da. H., m., born 1873, alive and well.
J. H., f., born 1875, alive and well.
H. H., f., born 1877, died at the age of 17, cause ?
Ro. H., m., born 1879, *myotonia atrophica.*
T. H., m., born 1881, *myotonia atrophica.*
R. H., m., born 1883, died at the age of 13 weeks (? spina bifida).
S. H., m., born 1885, *myotonia atrophica.*

R. H. is said to have died from some injury to the back received at birth. The sister from whom these facts were obtained thinks that the spine was open on the surface towards the lower end. So far as she knows, her mother had no miscarriages.

Apart from the three patients whose cases are here described none of the relatives have, so far as can be ascertained, been affected with any condition in the least resembling myotonia atrophica. L. H., the only other member of the family we have had an opportunity of examining, presents no evidence of the disease.

The eldest brother (W. H.) was operated on for cataract a year or two ago. The remaining brothers and sisters are said to have good vision.

There appear to have been no cases of epilepsy, insanity, or nervous disease in the family.

State.—The patient was admitted to hospital on 6th November 1912. His general muscularity is good. His intelligence is of a low type ; he is irritable and quarrelsome. His language is said by his fellow-patients to be of the type of indecency generally attributed to the schoolboy. There are no delusions and no loss of orientation, but he is suspicious, and rather cunning. His memory appears to be somewhat defective, as judged by his contradictory statements regarding his previous health.

The face is expressionless. There is no ptosis, the ocular movements are good, and there is no nystagmus. The right pupil is slightly larger than the left, but both are regular in outline, and react promptly to light. Vision is quite acute. All the intrinsic muscles of the face

are somewhat weak. The patient is unable to close the eyes against the slightest resistance, nor can he raise the corners of the mouth. There is distinct weakness of the orbicularis oris, and the buccinators appear to be weaker than normal. There is no difficulty in chewing. The temporal and masseter muscles contract fairly well, but are somewhat poorly developed: the lateral and forward movements of the jaw are well carried out. The jaw-jerk is not obtained. The upper and lower incisors cannot be opposed, although the jaws meet posteriorly. The palatal arch is high and narrow; the soft palate moves well, and the palatal reflex is present. The patient would not submit to a laryngeal examination. The movements of the tongue are somewhat slow. Articulation is slow and somewhat thick and indistinct.

Both sternomastoids are markedly atrophied and weak. The patient is able, however, with an effort to raise the head when lying on his back. The muscles of the shoulder-girdle and upper extremities are well developed, and their actions, with the exception of the hand movements, free and strong. The grasp on both sides is poor. All the intrinsic muscles of the hand show some degree of weakness. The thumb and little finger cannot be opposed. There is, however, no atrophy. When the hands are firmly closed the patient experiences considerable difficulty in opening them. This is due to inability to relax promptly the flexors of the fingers. The same phenomenon is seen in the interossei, for the patient, after grasping firmly, can only with difficulty separate the fingers while opening the hand. The duration of relaxation varies to some extent with the strength of the contraction, occupying, as a rule, several seconds. After repeated movements the duration of the relaxation is found to progressively decrease. Myotonic phenomena during voluntary movement were not observed in any other muscles.

The muscles of the trunk and lower extremities are fairly well developed and powerful, with the exception of the dorsiflexors of the feet. These are found to be distinctly weak in action, as tested by movements against resistance, though they are not definitely atrophied.

Nowhere is there any muscular hypertrophy, nor are fibrillary tremors present.

Beyond some quantitative reduction in the paretic muscles nothing abnormal was noted as regards the electrical responses. The mechanical excitability of the muscles was not examined in this case.

The knee-jerks and ankle-jerks are present, though feeble. The arm-jerks cannot be elicited. The epigastric and abdominal reflexes are very active. The plantar reflexes are present, and of the flexor type. Sensibility is unimpaired. The sphincters are unaffected. There is nothing to note regarding the other systems. The testes were not examined.

Case II.—Ro. H., male, aged 33, unmarried. The patient states that as a young boy he was as strong and as well developed as other boys, and that when he left school at the age of 14 he was in the fifth standard. When 16 years of age he had an attack of pneumonia, and was subsequently more or less confined to bed for five months. On recovering from this illness, regarding which we have been unable to obtain any further information, he says he was greatly reduced in weight. For a year afterwards he was very weak, and he has never altogether recovered his strength since. He was laid up again with pneumonia eleven and four years ago. It is now thirteen years since he did any regular work. Prior to this he followed a number of occupations, being employed as a light porter, a shop assistant, and a cleaner on the railway at different times, but never worked for any length of time in one situation. His inability to obtain regular employment appears to have been due to his mental temperament rather than to physical disability. Ro. H. appears to be morbidly conscious of his dignity, and, as his younger brother (T. H.) expresses it, "he would never stand being put upon."

Four years ago the patient says he was bitten on the arm by a horse, and it was after this that he first noticed weakness in this region. Subsequently weakness in the right arm and hand developed. Unlike his brothers, Ro. H. has never noticed any stiffness in the hands. The voice is, he says, thicker than it was. He has no difficulty in opening the eyes in the morning. The legs, he says, are as strong as ever they were, and he can walk long distances without fatigue. His brother T. informs us that he sometimes boxes with him, and that, although easily knocked out, Ro. H. is very quick on his feet. Within the past year the patient has noticed a marked diminution in sexual power.

State.—The patient's mental condition is best described by the expression "a little weak." His general muscular development is very poor. The physiognomy is characteristic, the facies presenting a very similar appearance to that met with in the Landouzy-Déjerine type of myopathy. The hair, which is fine and straight, appears to grow abnormally far off the forehead. The growth of hair on the face is poor. The face, which is expressionless and immobile, appears to be unduly elongated, the temporal and masseter regions being somewhat hollowed, while the mouth is kept slightly open. The upper eyelids cover the cornea to the edge of the pupil, while the lower lids hang somewhat, the sclerotic being visible below the corneal margin. The ocular sphincters are very weak, for even when the patient attempts to firmly close the eyes the lids are not completely approximated. After keeping the eyes closed for half a minute they are promptly opened on command. The patient cannot wrinkle the forehead, and when asked to raise his upper lip in order to expose the teeth the

PLATE I.

Three brothers suffering from myotonia atrophica described in the text. From left to right—Ro. H. (Case II.), T. H. (Case III.), and S. H. (Case I.). Note the appearance of the face and atrophy of the sternomastoids.

PLATE II.

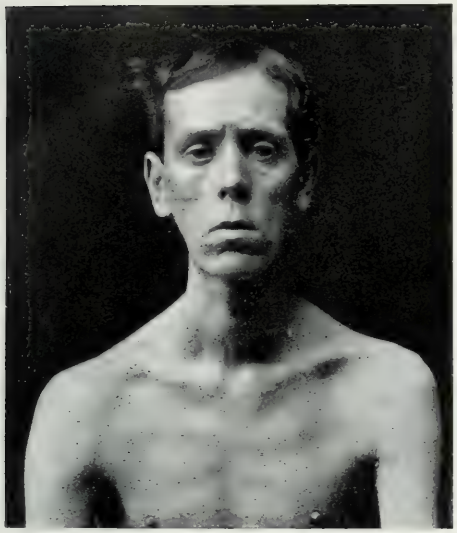

FIG. 1.

CASE II. (RO. H.).—Showing the myopathic facies and absence of the sternomastoids.

FIG. 2.

CASE II. (RO. H.).—Showing the peculiar poise of the head on the trunk.

FIG. 3.

CASE II. (RO. H.).—Showing an attempt to forcibly close the eyes and raise the upper lip.

FIG. 4.

CASE II. (RO. H.).—Showing an attempt to flex the head against resistance.

movement is a very feeble one. There is, too, some weakness of the buccal sphincter.

The pupils are of medium size, the right being a shade smaller than the left. They are regular in outline, and react promptly to light. There is no evidence of cataract. The right upper lid droops slightly. Although there is no noticeable strabismus when the eyes are in the position of rest, when the patient looks to the right the right eye does not move outwards to the full extent, while on looking upwards it tends to deviate slightly to the right. This defective movement of the eyes is said to have been present for many years. There is no diplopia and no nystagmus. The masseter and temporal muscles, though somewhat small in bulk, contract fairly well When the patient is asked to clench the jaws and then open the mouth he does so promptly. Articulation is distinct, but the voice is low-pitched, and there is a suggestion of nasal intonation.

Dr. J. S. Fraser, who kindly examined the throat, reports: "There is paresis of the soft palate and a persistent infantile epiglottis." As regards the larynx, he says: "On phonation the cords do not come quite together, and, on asking the patient to take a deep breath, they do not separate widely: in other words, while they do move inwards to some extent on phonation, and slightly outwards on inspiration, the movements are decidedly less than normal." The palatal arch is unusually high and narrow. Swallowing is unimpaired, and the tongue movements are quite satisfactory.

The neck presents a very striking appearance. The thyroid and cricoid cartilages, the thyroid gland, and the carotid arteries are quite superficial. The omohyoid muscles stand out prominently, while there is a deep hollow above the inner end of either clavicle. These appearances are due to the almost complete absence of the sterno-mastoid muscles. When the patient lies on his back and attempts to raise his head he is quite unable to do so.

The shoulders are somewhat sloping, the right a little more so than the left. The scapulæ are distinctly winged, their posterior borders lying practically parallel with the spine. This deformity is due to absence, or extreme atrophy, of the lower and middle thirds of the trapezius muscle. The upper part of the trapezius acts well, and is not atrophic. The rhomboids too, show no wasting. The serratus magnus, pectoralis major, supra- and infra-spinatus, teres major, and latissimus dorsi muscles are unaffected. The erector spinæ is somewhat poorly developed. Abduction and adduction at the shoulder and flexion and extension at the elbow are well carried out. The forearms are markedly wasted, both anteriorly and posteriorly, and there is marked weakness of the extensors and flexors of the wrists and fingers, and of the intrinsic muscles of the hand. The flexors of the fingers show the same difficulty in relaxation observed in the case of

S. H., though not to the same degree. In no other muscles of the body is there evidence of myotonia on voluntary movement.

The muscles of the trunk and lower limbs are poorly developed, but all the movements are satisfactorily performed against resistance, with the exception of dorsiflexion of the feet. This movement can be overcome without much difficulty. There is slight relative wasting of the anterior tibial muscles.

The gait presents no abnormality. Nowhere is there any muscular hypertrophy, and there are no fibrillary tremors. Practically all the muscles of the body, with the exception of the face and sternomastoids, show a decidedly increased excitability to direct mechanical stimulation. In the thumb muscles, flexors and extensors of the forearms, masseters, tongue, supra- and infra-spinati, the anterior tibial and calf muscles, the period of relaxation is markedly prolonged, the time varying from 3 to 10 seconds. This is particularly noticeable in the tongue, calves, and anterior tibial muscles.

The knee-jerks are present and rather diminished. The ankle-jerks are elicited with difficulty. The plantar reflexes are of the flexor type. For several years the patient has suffered from cold hands and feet. Sensation is unimpaired, as are the sphincters. The abdominal and thoracic viscera present no evidence of disease. The testes are distinctly atrophied, while the pubic hair is remarkable for its absence of curl.

Case III.—T. H., male, aged 31, a lithographer by occupation and unmarried, is a brother of the two patients whose cases have just been described. At the age of 17 he had pleurisy, for which he was tapped. So far as he remembers he has had no other illness. He denies syphilis. After a seven years' apprenticeship he commenced, eight years ago, regular work as a lithographer. About this time (eight years ago) he noticed for the first time that when he lifted a heavy weight or when he turned the key which fixes the lithographer's stone in position his fingers felt stiff, and he had difficulty in opening the hands. This stiff feeling in the fingers, which he says is more pronounced in cold weather, has persisted up to the present time, and is now, he thinks, rather more evident than it used to be, though it has never impaired his working capacity. Since it is only present in the morning when he begins to work, disappearing completely in the later part of the day, he is in the habit of fixing his stone in the evening, in order that it may be ready the following morning.

Two years ago he noticed that his speech was rather thick. His foreman remarked on it, and advised him to consult a throat specialist, by whom he was told that he had a narrow, contracted throat. His speech is, he says, no worse than it was at that time. Apart from the stiffness in the hands and the thickness in speech he has noticed nothing amiss. His arms, he says, feel quite strong, as do his legs.

He is fond of boxing, and says he is as nimble on his feet and as quick with his hands as ever he was.

State.—T. H. is a fairly muscular man. There is a lack of facial expression, which is very evident when he speaks. The patient is practically bald on the top of the head, in front of the line of the ears, and there is considerable thinning behind and at the sides. The hair is fine and straight. On the face it is almost confined to the upper lip and to a limited area at and below the point of the chin. The pupils are equal and regular: they react a little sluggishly to light: there is no ptosis, and the ocular movements are satisfactory. A few nystagmoid jerkings are observed on lateral deviation of the eyes. Vision is acute. The patient can elevate his eyebrows slightly, but cannot wrinkle the forehead. The ocular sphincters are very feeble. When he is asked to keep his eyes firmly closed for half a minute and then open them the upper lids are promptly raised. The masseter and temporal muscles are not wasted, and contract well. The incisors cannot be opposed. Articulation is thick and somewhat indistinct, as if the patient was speaking with something in his mouth. There is no definite nasal intonation. Dr. J. S. Fraser reports:—"There is paresis of the soft palate. The epiglottis is infantile, and tilted back over the larynx. Otherwise the larynx is normal." The tongue movements are satisfactory. Deglutition is unaffected. The sternomastoids are much atrophied. All the other muscles of the shoulder girdle and upper arm are well developed. The forearms are relatively less muscular, though not notably wasted. The movements of extension and flexion at the wrist are distinctly impaired. The grasp is somewhat feeble, as is the movement of extension of the fingers. The small muscles of the hand are certainly weaker than they should be: there is, however, no distinct wasting. The patient cannot approximate the thumb and little finger. When he closes the fist firmly and is then asked to open the hand there is some difficulty in relaxing the grasp, which passes off if the movement is persisted in.

The thoracic and abdominal muscles act well.

When the patient lies on his back and attempts with his arms folded across the chest to sit up he is unable to do so, for the head falls back on account of the weakness of the sternomastoids: if, however, the head is supported, he can raise himself to the sitting posture without difficulty. The dorsal muscles are well developed. There is no winging of the scapulæ and no atrophy of the trapezius.

The development of the lower limbs is not so good as that of the upper extremities: it cannot be said, however, that the muscles are distinctly atrophied. The quadriceps on either side, indeed, appears to be rather well developed, and the vastus internus especially is unusually prominent. All the movements of the lower extremities

are well carried out, with the exception of dorsiflexion at the ankle. This latter movement can be overcome without much difficulty. There is marked increase in the excitability of the muscles to direct mechanical stimulation. Prolongation of the period of relaxation was found in the muscles comprising the thenar and hypothenar eminences, the flexors and extensors of the forearms, masseters, tongue, sternomastoids, trapezius, quadriceps, anterior tibial and calf muscles. This was most pronounced in the tongue and anterior tibial muscles. No fibrillary tremors were observed.

The knee-jerks are present, though less active than normal. The right ankle-jerk is difficult to elicit, while the left cannot be obtained. The plantar reflexes are of the normal type.

The testes appear to be normal. There is no loss in sexual power.

Summary.—Three brothers, aged 33, 31, and 27, are the youngest living members of a family of 13. None of the other members have been, so far as has been ascertained, affected with similar symptoms, nor is there a history of any condition resembling myotonia atrophica, of nervous disease, or of cataract among the relatives. A brother born between the two youngest patients, who died aged 3 months, was very probably the subject of spina bifida. All the patients, but notably the eldest and youngest, are of a degenerate type. The symptoms of the disease first attracted attention in each instance during the third decade, and have progressed very slowly, if at all, since they were first noticed. The clinical features are almost identical, differing only in degree. Thus in each instance there is a myopathic facies, pronounced atrophy of the sternomastoids, more or less weakness of the muscles of the forearms and hands, and slight loss of power in the dorsiflexors of the feet, accompanied by slight wasting of the corresponding muscles and diminution of the tendon jerks. In all of the cases there is some difficulty in relaxing the grasp, but in no muscles, with the exception of the fingers, is there definite evidence of myotonia on voluntary movement. There are no fibrillary tremors and, with the exception of the thigh muscles in the case of T. H., no suggestion of muscular hypertrophy, nor is there any sign of cataract.

Case IV.—L. L., female, aged 38, single, a cook, was first seen in April 1912.

The patient states that she was a seven-months child, and that, although she has never been very robust, she has not suffered from any serious illnesses. Since girlhood she has been troubled with megrim, but of recent years the headaches have become much less severe. While she was a schoolgirl her mother used to remark that she ran

PLATE III.

FIG. 1.

CASE IV. (L. L.).—Showing the facial appearance.

FIG. 2.

CASE IV. (L. L.).—Showing the drop foot. The atrophy of the vasti interni and anterior tibial muscles is not well shown.

FIG. 3.

CASE IV. (L. L.).—An instantaneous photograph taken during the effort of opening the hand after forcible closure of the fist.

FIG. 4.

CASE IV. (L. L.).—Showing an attempt to flex the head on the trunk. Note the wasting of the sternomastoids.

differently from other children, although she could run as fast as girls of her own age. Her mother tells her that she used to throw her legs out in a peculiar way, and she remembers that she was often chaffed about the way she ran. Her hands, she thinks, have never been very strong, for she remembers as a young girl that her mother used to scold her when she was shaking carpets, because she would often let go the carpet she was holding.

The stiffness of the hands she first noticed after an attack of influenza some seven or eight years ago. The first occasion on which she observed this symptom was after she had been given gas for the extraction of some teeth. After recovering from the anæsthetic she found that she had difficulty in relaxing her grasp of the dentist's chair. The patient cannot say whether the weakness of the hands which now exists was present prior to the stiffness, or whether it was of later development. About three and a half years ago she began to find that she was easily tired on walking. The weakness of the legs has progressed until at the present time she cannot walk more than half a mile, and only then if she takes frequent rests. For several winters she has suffered from cold feet and hands, the fingers at times becoming white and dead.

Family History.—So far as the patient is aware, none of her relatives have suffered from difficulty in walking or weakness of the hands. Her father died of brain fever, following typhoid, at the age of 33, some three months before her birth. Her mother, who is 71 years of age, is in good health. She has a brother, aged 42, and a sister, aged 40, both of whom are well; a half-brother and half-sister, aged 34 and 30 respectively, both enjoy good health. No brothers or sisters have died. None of her relatives have to her knowledge suffered from any form of nervous disease.

State.—The patient was admitted to hospital on 20th April 1912. She is a well-nourished woman, and her general muscularity is fairly good. There are no obvious stigmata of degeneracy. Intelligence is good, and her memory is up to the average. Articulation is a little thick, and at times somewhat nasal. The pupils are equal in size, and their reaction is prompt. The movements of the eyes in all directions are perfect, and there is neither ptosis nor nystagmus. The face is expressionless, and all the facial movements are poor. The forehead can be wrinkled feebly. When the patient closes the eyes as firmly as she is able they can be opened with the greatest ease. On waking in the morning it is interesting to note that she often experiences difficulty in opening them. On closing the eyes as forcibly as possible and keeping them closed for some seconds an appreciable interval elapses before she can raise the upper lids. The masseters and temporals, though somewhat poorly developed, contract fairly well. On asking the patient to close her jaws and keep them clenched firmly for half

a minute she is afterwards able to open the mouth promptly when asked to do so. The jaw-jerk cannot be elicited. The palate moves somewhat feebly. On several occasions some few weeks ago fluids regurgitated through the nose while she was drinking. The palatal reflex is present. Dr. Logan Turner, who kindly examined the larynx, was of opinion that there was slight weakness in the abductor movements of both vocal cords. There is no difficulty in swallowing. The movements of the tongue are distinctly slow. The sternomastoids are very markedly atrophied, and their movements correspondingly feeble. The muscles of the shoulder-girdle are well developed; the prominence of the infra-spinati is indeed somewhat striking. The upper part of the trapezius, the deltoid, teres major, latissimus dorsi, and biceps are very well developed, and the movements which they take part in are effectively carried out. The musculature of the forearms is not so good as that of the upper arms, but there is no pronounced atrophy either here or in the hands. Extension and flexion at the wrist can be overcome without much difficulty, while there is even more pronounced weakness of the extensors and flexors of the fingers. There is, too, distinct weakness of the small muscles of the hands. After clenching the fist firmly the difficulty experienced in opening the hand is very striking, from 15 to 20 seconds elapsing before the fingers can be fully extended. When the grasping movement has been several times repeated the ease with which relaxation occurs rapidly increases, until before long the movement of extension is performed quite freely. That the disability to extend the fingers freely is due to defective relaxation of the flexors is obvious, for these muscles are felt to be in a state of contraction. The same phenomenon is also present in the extensors of the fingers, for when the fingers are extended against resistance and the patient then attempts to close her hand she has considerable difficulty in doing so. The muscles of the back and abdomen are quite strong. All the movements of the lower limbs are powerful, with the exception of dorsiflexion of the feet and extension at the knee and hip. The first-named movement is very feeble, while the movements at the knee and hip are only slightly impaired. There is distinct wasting of the vastus internus on either side, and the anterior tibial group of muscles shows some atrophy, though not to the degree one would expect from the weakness of the corresponding muscles. The patient walks with a steppage gait, raising especially the knee on the right side. The knee-jerks are feeble, and only elicited on reinforcement. The ankle-jerks cannot be obtained. The plantar reflexes are flexion. Sensation is unimpaired. The thoracic and abdominal viscera are healthy. Menstruation is regular.

Historical Résumé, with Special Reference to Incidence.—The occasional co-existence of muscular atrophy and myotonia, the

characteristic symptom of Thomsen's disease, was first emphasised by Hoffmann, who in 1900 collected 12 instances from the literature, to which he added two personal observations. He classed these cases in two groups. In the first he placed 5 cases (Dana; Déléage (2); Bettmann; Hoffmann) in which the association might be regarded as coincidental, a view adopted by subsequent writers; in the second he included the remaining cases (Jolly; Pelizaeus (3); Kornhold; Schoenborn; Noguès and Sirol; Hoffmann (2)), which were all characterised by a more or less bilateral, symmetrical, progressive atrophy unaccompanied by fibrillary tremors. Although the distribution of the atrophy showed considerable variation, Hoffmann laid stress upon the great similarity between the 2 cases he had personally observed. Both of these patients exhibited (*a*) a myopathic facies; (*b*) pronounced atrophy of the forearms, particularly of the flexor muscles; and (*c*) of the sternomastoids. He further indicated that the wasting resembled more closely the myopathic than the myelopathic atrophies. The atrophy and myotonia must, he argued, be related, for the association was too frequent to be accounted for by coincidence. In his opinion the myotonia was probably the primary disease, the atrophy being symptomatic.

Isolated cases reported by Longard (1898) and Bernhardt (1899) as examples of Thomsen's disease with muscular atrophy, in both of which there was slight wasting of the forearms, seem to have escaped Hoffmann's notice. Gaupp in 1900 described a case in which, in addition to some atrophy of the upper limbs (notably the forearms and neck), the patient was the subject of infantilism. Frohmann the same year presented a patient in whom the trapezii and interossei were atrophied, and who at the same time exhibited nystagmus and Rombergism; while Schott in 1901 reported a case in which there was some flattening of the thenar eminences and interosseal spaces, speech being somewhat indistinct and the facial movements weak.

Rossolimo's contribution (1902) is of special interest, since the Russian observer was the first to employ the term *myotonia atrophica*. The case which he reported closely resembled the two described by Hoffmann, the atrophy involving the face, masseters, forearms, extensors and adductors of the thighs and muscles below the knees. Although Schoenborn and Frohmann had previously noted the microscopical appearances presented by excised portions of muscle, the histological changes met with in the present case are more fully described and well depicted. According to Rossolimo,

the atrophy in the muscle fibres is to be regarded as a stage in the hypertrophic process, and the muscular wasting a symptom or variety of the myotonia.

A number of case records occur in the literature during the next five years (Jaquet; Schultze; Cassirer; Fuchs (2); Lannois; Berg; Curschmann; Lortat-Jacob et Thaon; Nonne-Siemerling-Hoffmann-Steinert; Batten; Pässler-Steinert (2); Pelz; Fürnrohr (2); Mirallié; Jalaber et Culerre; Kleist; Voss; Ramsay-Hunt (2)). For the most part these reports are contained in the notices of medical societies, and are in consequence brief; the communications of Berg, Pelz, and Fürnrohr are, however, in this respect exceptional. Berg in his dissertation, which the present writers have been unable to obtain, reviews the subject of muscular atrophy in myotonia congenita. Pelz, writing upon atypical forms of Thomsen's disease, gives abstracts of 17 of the cases reported up to that time in which there was associated atrophy. His remarks in this connection are limited to a consideration of the relationship between the myotonia and the atrophy. While admitting that the latter may be symptomatic—a view which, in his opinion, is strongly supported by the circumstance that in the majority of cases the myotonia had long preceded the atrophy, while in no instance reported up to that time had the reverse been noted—he tentatively suggests the possibility that these cases may constitute a type of disease distinct from myotonia congenita on the one hand and from the myopathies on the other. Fürnrohr, in his paper, reviews the literature, and from his study arrives at certain conclusions which may be briefly summarised as follows:—(1) There is a "myotonia without tone," the myotonia showing itself in the electrical and mechanical myotonic reaction in the muscles, even in the absence of demonstrable myotonic phenomena, during voluntary movements. (2) The myotonic manifestations, as a rule, long precede the atrophy. (3) Single or numerous muscles may be affected by the atrophy, no law for the localisation of the atrophy having as yet been determined. (4) The small muscles of the hands and feet are affected frequently by the atrophy, in the localisation of which the occupation of the patient may under circumstances have a certain influence. (5) Under appropriate treatment there may be a certain amount of improvement.

Two important papers appeared simultaneously in 1909, the one by Batten and Gibb, the other by Steinert. The English observers draw attention to the frequency with which a similar

distribution of the atrophy is met with, these cases constituting a type which they think worthy of recognition. The characteristic features of the condition which they describe are "weakness of the facial muscles (myopathic face), atrophy of the sternomastoids, atrophy of the vasti of the thighs and dorsiflexors of the feet, and a slow relaxation of certain muscles after contraction. The more forcible the contraction, the slower the relaxation." Among 29 recorded cases which they were able to find, they give abstracts of 15 which more or less presented these features, as did 5 new cases which they here describe. These cases they analyse as regards familial characters, etiology, sex, age of onset, distribution of the atrophy and the myotonia; and, referring to the atrophy, they suggest "the possibility of there existing a form of myopathy differentiated clinically from the classical types as much by the distribution of the wasting as by the presence of the myotonia." They make no reference to the cases which they exclude as failing to conform with the type which they describe.

Steinert in his exhaustive monograph deals with 26 collected cases and 6 personal observations, 4 of the latter having been already reported by previous observers (Nonne-Siemerling-Hoffmann; Berg; Pässler (2)). The 5 cases referred to by Hoffmann in which atrophy seemed to be coincidental are not included in this list. Pelz's case, in which there was weakness but no definite atrophy, is also excluded on account of the absence of wasting, although Steinert has no doubt that it belongs to this group. Upon analysing this material he points out that involvement of the forearms, sternomastoids, and face, a distribution which was present in all the patients he had personally observed, is highly characteristic of the muscular atrophy which occurs in association with myotonia. These cases do not, however, in his opinion, constitute a distinct type, but rather a type of muscular atrophy in myotonia congenita. In some of the reported instances the atrophy was widespread, in some it was limited to the upper and lower extremities, while in others the arms were alone affected. The last-named cases, in Steinert's opinion, probably represent an early stage of the condition. Among other points to which he directs attention are the occasional occurrence of congenital deformities, of atrophy of the testes, of vasomotor phenomena, notably a tendency to cold hands, and of baldness. The second part of Steinert's paper is devoted to an account of the anatomical findings in one of his cases, the only case which has up to the present time been examined post mortem.

Within the past three years a number of cases have been reported (Turney (2); Steinert; Greenfield (3); Hirschfeld; Kennedy and Oberndorf (2); Pemberton (2); Grund (4); Fearnsides; Griffith; Tetzner). Greenfield's observations are of special interest, for his patients, and those described by Turney, of which he also gives a detailed account, come of a family several of whom suffered from congenital cataract.

The present writers, after excluding 5 cases in which the atrophy was probably a coincidental occurrence in the course of Thomsen's disease (Hoffmann), have found 61 cases of associated myotonia and atrophy, making 65 in all when those reported in the present communication are included. These cases are in the writer's opinion all to be regarded as examples of the same condition, differing only in the extent and degree of the atrophy. Strong arguments in support of this contention are:—Firstly, that myotonia is a symptom which has only been met with in Thomsen's disease and in a few isolated cases of syringomyelia (Rindfleisch), apart from the two cases under discussion: and secondly, that the atrophy which these patients present is characterised by distinctive features, in that it is more or less symmetrical, very slowly progressive, and affects similar parts.

Batten and Gibb, as we have seen, were the first to demonstrate that in many cases in which myotonia and muscular atrophy are associated the distribution of the wasting is strikingly similar. While admitting the importance of this observation, the writers are at the same time inclined to think that it is, in some respects, undesirable to differentiate as a definite type cases which appear to be identical with those in which the atrophy is similar in its features though less extensive.

Upon analysing the 65 cases above referred to in relation to this point, we find that it is possible to class them in three groups, in accordance with the distribution of the atrophy. We would, however, again repeat that this division is, in our opinion, an arbitrary one, and is merely adopted here in order to demonstrate the relationship between cases in which the wasting is localised and others in which it is widespread.

Group A.—Observations by Noguès et Sirol; Hoffmann (2); Rossolimo; Fuchs (obs. I.); Berg-Steinert; Cassirer; Nonne-Siemerling-Hoffmann-Steinert; Lortat-Jacob et Thaon; Pässler-Steinert (2); Mirallié; Jalaber et Culerre; Kleist; Fürnrohr (obs. II.); Ramsay-Hunt (2); Steinert (3); Farquhar Buzzard; Batten and Gibb (4); Turney (2); Pemberton (2); Kennedy and Obern-

dorf (2); Hirschfeld; Greenfield (3); Grund (4); Griffith; Fearnsides; Tetzner; Bramwell and Addis (4).—In this group are included 45 cases which closely resemble each other, in that all exhibit the myopathic facies and wasting of the upper extremities, while in the great majority there was in addition atrophy of the sternomastoids and of the limbs.* It is interesting to note that with one exception—Greenfield's second observation—all the cases reported since 1909 which the writers have been able to find (23 in number) fall into this class.

Group B.—Observations by Kornhold; Schoenborn; Lannois; Fürnrohr (obs. I.); Voss.—This group comprises 5 cases, all of which exhibited atrophy in both upper and lower extremities, the features and distribution of the atrophic paresis in these regions resembling that met with in the first group.

Group C.—Observations by Jolly; Pelizaeus (3); Longard; Bernhardt; Frohmann; Gaupp; Schott; Jaquet; Fuchs (obs. II.); Schultze; Curschmann; Pelz; Greenfield (obs. II.). — The cases included in this group are 15 in number, the atrophy in all but one case being localised to the upper extremities. Details regarding the distribution of the atrophy in these cases are as follows:—

Case I.—*Jolly.*—Atrophy of the right thenar eminences and to a slight degree of right forearm and right hand. Reaction of degeneration in muscles of thumb.

Cases II., III., and IV.—*Pelizaeus.*—Deltoids and thenar eminences; reaction of degeneration in thumb muscles. Two sisters appear from the brief report to have had myotonia and atrophy, the latter having a similar distribution.

Case V.—*Longard.*—Very slight atrophy limited to the forearms; some muscles markedly hypertrophied.

Case VI.—*Bernhardt.*—A slight degree of weakness and atrophy of forearms, hands, and finger muscles.

Case VII.—*Frohmann.*—Almost complete atrophy of lower two-thirds of both trapezius muscles, also atrophy of interossei. This patient showed nystagmus and Rombergism.

Case VIII.—*Gaupp.*—Muscles of forearms, small muscles of hands, triceps, and supinator longus; infantilism (?).

Case IX.—*Schott.*—Interosseal spaces shrunken and thenar

* One of Batten and Gibb's patients presented the myopathic facies and atrophy of the sternomastoids, with no involvement of the limbs. This case has been classed in Group A. A brother of the patient presented the typical features of myotonia atrophica.

eminences flat; face asymmetrical and expressionless, knee-jerks and ankle-jerks increased.

Case X.—*Jaquet.*—Atrophy of posterior part of deltoids, and some flattening of both anterior and posterior aspects of forearm.

Case XI.—*Fuchs* (obs. II.).—Very slight atrophy limited to the upper extremities; fibrillary tremors.

Case XII.—*Schultze.*—Atrophy of forearms.

Case XIII.—*Curschmann.*—Atrophy of radial extensors of right hand and extensors and abductors right thumb, also of the abductor pollicis and extensors of left thumb. Knee-jerks absent.

Case XIV.—*Pelz.*—Slight weakness of arms, though no definite atrophy.

Case XV.—*Greenfield* (obs. II.).—Some weakness of dorsiflexors of left ankle, but very little obvious wasting. Two sisters and a brother have typical myotonia atrophica.

It is possible that in some of the cases included in this last group the association of the atrophic paresis with the myotonia was "accidental." This may perhaps be so in the cases described by Jolly and Pelizaeus (obs. I.), in both of which the reaction of degeneration was present in the muscles of the thumb; in Fuch's second case, in which fibrillary tremors were observed; and possibly in the case reported by Frohmann, in which nystagmus and Rombergism were noted; but the writers are inclined to think that with these possible exceptions the relationship of the atrophy and myotonia is to be regarded as similar to that which exists in the cases classed in the first two groups, and that to attempt to separate them therefrom by any sharp line is undesirable. It is of interest to note that two sisters and a brother of Greenfield's patient, in whom the atrophy was limited to the dorsiflexors of one foot, presented a typical picture of the disease.

Features of Myotonia Atrophica.—Myotonia atrophica is a rare condition. Of the 65 cases found in the literature by writers, 36 have been reported in German, 17 in English, 6 in French, and 6 in American publications.

A variety of names have been employed to denote these cases, viz.:—Acquired myotonia (Jolly); Thomsen's disease with muscular atrophy (Frohmann, Noguès and Sirol); partial myotonia congenita (Gaupp); partial myotonia with muscular atrophy (Schott); atrophic form of Thomsen's disease (Cassirer); myotonia with muscular atrophy (Lannois); muscular atrophy with the electrical reactions of Thomsen's disease (Lortat-Jacob et Thaon); combination of myotonia and muscular dystrophy (Nonne);

atypical form of Thomsen's disease (Pelz); amyotrophic myotonia (Pässler); facio-scapulo-humeral myopathy with myotonic symptoms (Mirallié; Jalaber et Culerre); muscular atrophy with slow relaxation of muscles (Kleist). All recent writers have adopted myotonia atrophica, a term first introduced by Rossolimo, as the most appropriate designation.

Etiology and Mode of Onset. — Males are much more often affected than females; thus among 62 cases there were 51 men and 11 women.

The age at which the condition develops is often difficult to ascertain with certainty, since the symptoms are as a rule so insidious in their onset. This is especially true of the myotonia, which in its slighter degrees may exist for many years without causing any appreciable inconvenience to the patient. As Batten and Gibb point out, in the majority the earliest indications are noted during the third decade. This was so in all of our cases. In quite a number of instances, however, notably in several of those in which the atrophy was confined to the upper limbs, the symptoms developed from the 16th to the 20th year, while several patients stated that they had noticed some weakness of the hands since childhood. Three patients first exhibited evidence of the disease after the age of 40.

The myotonia has without doubt preceded the atrophy by a number of years in the great majority of cases, although occasionally the latter has been the first symptom to engage attention (Rossolimo; Hunt; Batten and Gibb; Kornhold; Pemberton). Difficulty in relaxing the grasp is indeed almost always the earliest symptom to attract notice. Stiffness of the tongue was the first symptom in cases observed by Schott and Steinert (obs. I.). The paresis, when it appears, affects the upper extremities, notably the forearms and hands, almost invariably in the first instance, very exceptionally the lower extremities. In one case (Hoffmann) atrophy of the face was the earliest sign.

The tendency for myotonia atrophica to affect several members of a family is the one feature of outstanding etiological significance. Thus three of our patients were brothers; in one family a brother and four sisters (Greenfield-Turney), in another a mother, two sons, and a nephew (Grund), suffered from the disease. Other instances are recorded in which two brothers (Pässler; Hunt) and a brother and a sister (Hoffmann; Batten and Gibb) were affected. The mother, grandmother, and a brother of Pelz's patient are reported to have been troubled with "muscular stiff-

ness," while the mother of Fearnsides' patient, dying at the age of 70, and two sisters, are said to have had the same difficulty in walking. Steinert met with a patient whose father and brother were affected with myotonia without atrophy. The sister of a case reported by Turney, and the mother of one of Batten and Gibb's patients, had difficulty in relaxing the grasp, while the father of Noguès and Sirol's patient is stated to have had some difficulty in chewing.

An acute illness preceding the onset of symptoms had been noted in a few instances, *e.g.* an acute arthritis of the knee-joint (Rossolimo), an attack of acute rheumatism (Buzzard), an infective fever of undetermined nature (Lorat-Jacob et Thaon), an attack of pneumonia (Fürnrohr; Mirallié; Jalaber et Culerre), ulceration of the cornea (Turney, obs. II.). Exposure to cold was blamed in one case. A trauma was followed by symptoms in two cases; thus Tetzner's patient first observed stiffness in the hands five weeks after a severe accident in which the clavicles and two ribs were broken, while a patient of Kennedy and Oberndorf's, six weeks after a fall on the right knee, found that the corresponding leg was weak. Curschmann and Jolly were inclined to think that occupation had played a part in determining the localisation of the atrophy in the cases which they described.

Symptoms.—The physiognomy presented by patients with myotonia atrophica is well figured by a number of authors (Noguès and Sirol; Rossolimo; Lannois; Batten and Gibb; Pemberton; Greenfield; Griffith; Tetzner).

The Distribution and Character of the Atrophy, as has been mentioned, varies. In the majority the face, limbs, and sternomastoids were involved, in a few the limbs were alone affected, while in some cases the wasting was limited to the arms and hands. Summarising the general distribution in the 65 cases referred to we find that the upper limbs were implicated in all but two (Batten and Gibb; Greenfield), the face in 45, and the lower limbs in 40.

The facial appearance is repeatedly likened to that seen in the Landouzy-Déjérine type of myopathy. In some cases the weakness, which affects especially the ocular and oral sphincters, was so extreme that the eyelids could not be opposed.

The sternomastoids were atrophied in 37 cases, in a number of which, as in our second patient, these muscles are said to have been absent or practically absent. In every instance in which

the sternomastoids were atrophied the face was also affected, while in one patient (Batten and Gibb) these parts were alone involved.

The upper limbs were implicated in all but 2 cases. The muscles of the shoulder-girdle comparatively seldom suffer. Atrophy of the trapezius was, however, noted in 11 cases, in 3 of which the lower two-thirds of the muscle was absent. Winging of the scapula, present in 4 cases, was, in all, as in our case, apparently due to paresis of the trapezius. The supra- and infra-spinati were markedly atrophic in 4 cases, the latissimus dorsi in 2. The upper arm muscles showed wasting in 25 cases, the deltoids being specially mentioned in 10. The atrophy was usually more pronounced in the triceps than in the biceps in those cases in which these muscles were involved. Wasting of the forearm musculature is very constant. These muscles appear, indeed, to have been more or less wasted in all but 11 cases, while in 14 they were the only muscles of the upper extremity to be affected. The atrophy, when pronounced, was, as a rule, more marked along the ulnar aspect of the limb, the flexors being usually weaker than the extensors. The intrinsic muscles of the hands presented some degree of atrophy in 15 cases.

The lower extremities were involved in 40 cases, in all of which, with the exception of Greenfield's patient, the upper limbs also suffered. When the thighs were involved, as was the case in 16 instances, it was always the anterior muscles, and, as Batten and Gibb pointed out, especially the vasti, the rectus femoris commonly escaping. In two cases respectively the abductors and glutei were notably affected. The muscles below the knee were implicated in 34, while in 14 the atrophy in the lower extremities was limited to this region. In 15 the wasting was confined, or practically confined, to the anterior tibial group, while in 7 the peronei are especially referred to. Ten patients showed a steppage gait. Atrophy of the calves is seldom noted, and when present was always associated with a more pronounced change in the muscles on the front of the leg. In Steinert's second case the muscles of the back were much wasted.

The masseters and temporals were the seat of atrophy in 17 cases. Three instances of consequent dislocation of the jaw have been reported (Steinert, obs. I. and II.; Tetzner). Some defect of movement of the vocal cords was noted in cases referred to by Steinert (obs. I.); Batten and Gibb (obs. III.); Griffith; Bramwell and Addis (obs. II. and IV.). Ptosis was present in four instances.

Griffith's patient complained of diplopia at times. The pupils were unequal in 2 of our cases. Abolition of the light reflex has not been observed. Palatal weakness, though seldom specifically mentioned, would appear to be not uncommon, judging from the not infrequent reference to nasal speech. Nasal regurgitation was noted by Tetzner, and was also present in one of our cases. Cassirer's patient had some difficulty in swallowing. In two cases (Steinert, obs. IV.; Lortat-Jacob et Thaon) atrophy of the tongue is described, while in Griffith's patient the tongue felt flabby and could not be voluntarily hardened.

The degree of muscular atrophy varies greatly. In cases reported by Noguès et Sirol, Fürnrohr (obs. II.), Fuchs (obs. I.), and Steinert (obs. I.), the wasting was both extensive and pronounced. Again, in some cases in which the atrophy was quite localised it was also marked, while in others it was comparatively slight. Although sometimes unilateral, and this applies more particularly to cases in which it was limited in extent, the wasting was, in the great majority of cases, symmetrical. Fibrillary tremors are referred to in only 4 cases (Voss; Fuchs (2); Lortat-Jacob et Thaon). The electrical excitability in the wasted muscles presents merely quantitative changes. Two writers, however, refer to the presence of a true reaction of degeneration (Jolly; Pelizaeus), while a partial reaction of degeneration was met with by Schoenborn. A myasthenic reaction has also been observed (Steinert, obs. I.). Muscular hypertrophy, present in six cases, involved in one several muscles (Longard), while in others it occurred in the thenar eminence (Cassirer), the anterior tibial muscles (Batten and Gibb), the calves (Griffith), and the infra-spinati (Greenfield; Bramwell and Addis).

The Myotonia.—An essential symptom of the condition manifests itself in (*a*) a slow muscular relaxation after contraction, and (*b*) a slow, tonic, persistent contraction when the muscles are struck or stimulated electrically. Exceptionally the myotonia is widespread and pronounced, as in Griffith's case; far more often it is comparatively slight, and in many cases is only obvious to the patient in some slight difficulty in relaxing the grasp. Even in the absence of evidence of myotonia during movement the symptom cannot be excluded unless the characteristic response to mechanical and electrical stimulation is also absent. Embarrassment during mastication, in moving the tongue, and in opening the eyes in the morning was complained of by several patients in whom no objective muscular difficulty was observed beyond an inability to open

promptly the closed fist. The myotonic response to mechanical stimulation was very beautifully observed in the tongue in one of our patients. In this case, as in several of the reported instances, the myotonia was only noticeable in the early part of the day, while this patient also assured us that the stiffness was more pronounced when the hands were cold.

The reflexes show no constant alteration. Thus in 33 cases in which they are specially referred to, the knee-jerks are described as present or normal in 10, diminished in 9, absent in 8, and increased or brisk in 2, while in 4 cases one knee-jerk was absent. Among 16 cases in which the condition of the ankle-jerks is mentioned, it is noted that in 11 they were absent, in 1 diminished, and in 4 normal or exaggerated. The plantar reflex is always of the normal (flexor) type.

Sensory symptoms have been but seldom observed. Longard's patient complained of severe lightning pains in the legs, while in one of Batten and Gibb's cases (obs. I.) sharp shooting pains in the thighs and small of back were noted. There was extensive anæsthesia in the case described by Lortat-Jacob et Thaon, also in one of Hoffmann's cases, the last-named writer attributing the sensory disturbance in his patient to a complicating hysteria. The slight sensory defect on the outer surface of the thighs noted by Kleist may possibly have been due to meralgia paresthetica, which condition was also noted by Steinert in one case.

The frequency with which cold hands are complained of is somewhat striking (Pässler (2); Rossolimo; Steinert (obs. IV.); Fearnsides; Tetzner; Bramwell and Addis (obs. IV.)). Pronounced dermographia was seen by Steinert (obs. III.) in one case. The same author remarks on the frequency with which premature baldness occurs; it was a well-marked feature in four of his cases. Two of our patients presented a remarkably poor development of facial hair. Congenital cataract, as pointed out by Greenfield, may occur in families suffering from myotonia atrophica; this observer met with four instances in the family which he reports. In Fearnsides' case cataract was also present, two sisters of this patient suffering from the same condition, while Hirschfeld's patient, a glass-blower by occupation, is said to have suffered from glass-blower's cataract. Congenital deformities are occasionally referred to. Thus Voss has noted a congenital defect of the abdominal muscles; in 2 cases a malformation of the ear is described, while in 2 of our patients the palatal arch was unusually high. Steinert was the first to indicate that atrophy

of the testes is not uncommon. Nine cases have now been reported in which this observation has been made (Pässler (2); Fürnrohr (2); Gaupp; Steinert (2); Pemberton; Bramwell and Addis). Polyuria was present in one of Steinert's cases, while in the case reported by Griffith the pulse-rate was unusually slow.

Morbid Anatomy.—Our knowledge of the pathological anatomy of myotonia atrophica is based, firstly, on the examination of excised pieces of muscle in cases reported by Schoenborn, Frohmann, Rossolimo, Lannois, Siemerling, and Griffith; and, secondly, upon a complete post-mortem examination made by Steinert.

Schoenborn found an increase in the size of the muscle fibres in the deltoid exactly similar to that met with in Thomsen's disease, while in the tibialis anticus the fibres were atrophied and there was an increase of the nuclei and connective tissue which, in his opinion, resembled more closely the myopathic than the myelopathic atrophies. Frohmann described both hypertrophied and atrophied fibres with nuclear proliferation. Lannois met with a lesion in the muscles which he says resembled in every detail the classical picture of the myopathies. Siemerling noted marked hypertrophy of muscle fibres with increase of interstitial tissue. Rossolimo was struck with the great variation in the size of the fibres; he, too, remarks on the great nuclear proliferation and increase of interstitial tissue. Griffith observed a considerable increase in size of many of the muscle fibres, with marked increase of the nuclei within the muscle; there was, however, no increase of the interstitial tissue, either fibrous or fatty, in the portions of muscle he examined. Steinert's observation is of great importance, since the case which he records is the solitary instance in which a post mortem has been made. The patient was a man of 44 in whom there was extensive atrophy, most pronounced in the muscles of the thumb, face and jaw, and the sternomastoids. The outstanding abnormal feature was the widespread cirrhosis of the muscles; in addition there was, however, a tabetic-like degeneration of the posterior columns, which the author is inclined to think may not be an accidental complication, but an integral feature of the disease.

Relation to Thomsen's Disease and Myopathy.—There is a very close resemblance between myotonia atrophica and Thomsen's disease. The symptom myotonia is almost peculiar to these two conditions; in both there is a tendency for several members of

a family to be affected, while there is reason for believing that myotonia atrophica may, like Thomsen's disease, be transmitted from one generation to another. Further, cases of myotonia atrophica have been reported in which other members of the family have suffered from myotonia without atrophy. Again, the atrophy closely resembles in its features that met with in the muscular dystrophies, although it does not correspond in its distribution to any recognised type of myopathy. The writers are inclined to agree with Steinert, who regards myotonia atrophica as a type of Thomsen's disease.

Prognosis and Treatment.—Time must elapse before any exact expression of opinion is possible as to prognosis, although existing data would seem to show that the condition in itself has little tendency to shorten life. Since atrophy of the testes has been observed in quite a number of cases, testicular extract may possibly be found to be of value.

The writers' acknowledgments and thanks are due to Dr. S. A. K. Wilson, who pointed out to them the nature of the condition in the case of L. L., the first example of the disease which they had personally observed.

Bibliography.—(*With the exception of those items marked with an asterisk* (*) *the original reports or papers have been consulted.*)—1. Batten, *Brain*, 1906, vol. xxix. p. 414. 2. Batten and Gibb, *Proc. Roy. Soc. Med.*, 1909, pt. ii. (Neurol. Sect.), p. 32. 3. *Idem*, *Brain*, 1909, vol. xxxii. p. 187. *4. Berg, *Diss. Bonn.*, 1904. 5. Bernhardt, *Deutsch. med. Woch.*, 1899, Bd. xxv. S. 169. 6. Bettmann, *Deutsch. Zeitschr. f. Nervenheilk.*, 1896-97, Bd. ix. S. 331. 7. Buzzard, Farquhar, *Proc. Roy. Soc. Med.*, 1909, vol. ii. pt. ii. (Neurol. Sect.), p. 33. 8. Cassirer, *Neurol. Centralbl.*, 1904, S. 39. 9. Curschmann, *Berl. klin. Woch.*, 1905, Bd. xlii. S. 1175. *10. Dana (quoted by Hoffmann). *11. Déléage, *Thèse de Paris*, 1890. 12. Fearnsides, *Proc. Roy. Soc. Med.*, 1912, vol. v. pt. ii. (Neurol. Sect.), p. 77. 13. Fox, Clayton, *Ibid.*, 1910, vol. iii. pt. ii. (Laryng. Sect.), p. 20. 14. Frohmann, *Deutsch. med. Woch.*, 1900, Bd. xxvi. S. 6, v. 15. Fuchs, *Wien. klin. Woch.*, 1904, S. 722. 16. Fürnrohr, *Deutsch. Zeitschr. f. Nervenheilk.*, 1907, Bd. xxxiii. S. 25. 17. Gaupp, *Centralbl. f. Nervenheilk. u. Psychiat.*, 1900, Bd. xi. S. 65. 18. Greenfield, *Rev. Neurol. and Psychiat.*, 1911, vol. ix. p. 169. 19. Griffith, *Quart. Journ. Med.*, 1912, vol. v. p. 229. 20. Grund, *Neurol. Centralbl.*, 1912, S. 1463. 21. Hamilton, *Rev. Neurol. and Psychiat.*, 1911, vol. ix. p. 645. 22. Hirschfeld, *Zeitschr. f. Neurol. u. Psychiat.*, 1911, Bd. v. (originalien). S. 682. 23. Hoffmann, *Deutsch. Zeitschr. f. Nervenheilk.*, 1896-97, Bd. ix. S. 272. 24. *Idem*, *Ibid.*, 1900, Bd. xviii. S. 198. 25. *Idem*, *Neurol. Centralbl.*, 1906, S. 576. 26. Hunt, Ramsay, *Journ. Nerv. and Ment. Dis.*, 1908, p. 269. 27. Jaquet, *La Semaine Médicale*, 1903, p. 381. 28. Jolly, *Neurol. Centralbl.*, 1896, S. 140. 29. Kennedy and Oberndorf, *Journ. Amer. Med. Assoc.*, 1911, vol. lvii. p. 117. *30. Klerst, *Journ. f. Psych. u. Neurol.*, 1907, Bd. x. S. 95. *31. Kornhold, *Thèse de Paris*, 1897. 32. Lannois, *Nouv. Icon. de la Salpêt.*, 1904, tom. xvii. p. 450. 33

Longard, *Deutsch. med. Woch.*, 1898, Bd. xxiv. S. 91, v. 34. Lortat-Jacob et Thaon, *Arch. de Neurol.*, 1905, tom. xx. p. 132. 35. Mirallié; Jalaber et Culerre, *Neurol. Centralbl.*, 1907, S. 1097. 36. Nogués et Sirol, *Nouv. Icon. de la Salpêt.*, 1899, tom. xii. p. 15. 37. Nonne, *Neurol. Centralbl.*, 1905, S. 142. 38. Oberndorf, *Journ. Nerv. and Ment. Dis.*, 1911, p. 688. 39. Passler, *Neurol. Centralbl.*, 1906, S. 1064. 40. Pelizaeus, *Berl. klin. Woch.*, 1897, Bd. xxxiv. S. 609. 41. *Idem*, *Neurol. Centralbl.*, 1897, S. 139. 42. Pelz, *Arch. f. Psychiat.*, 1907, Bd. xlii. S. 704. 43. Pemberton, *Amer. Journ. Med. Sci.*, 1911, vol. cxli. p. 253. 44. Rindfleisch, *Deutsch. Zeitschr. f. Nervenheilk.*, 1907, Bd. xxxiii. S. 171. 45. Rossolimo, *Nouv. Icon. de la Salpêt.*, 1902, tom. xv. p. 63. 46. Schoenborn, *Deutsch. Zeitschr. f. Nervenheilk.*, 1899, Bd. xv. S. 274. 47. Schott, *Ibid.*, 1901-1902, Bd. xxi. S. 261. 48. Schultze, *Ibid.*, 1903, Bd. xxv. S. 1. 49. Siemerling, *Münch. med. Woch.*, 1905, Bd. lii. S. 1072. 50. Steinert, *Deutsch. Zeitschr. f. Nervenheilk.*, 1909, Bd. xxxvii. S. 58. 51. *Idem*, *Ibid.*, 1910, Bd. xxxix. S. 168. 52. Tetzner, *Neurol. Centralbl.*, 1912, S. 89. 53. Turney, *Proc. Roy. Soc. Med.*, 1910, vol. iii. pt. i. (Clin. Sect.), p. 145. 54. Voss, *Deutsch. Zeitschr. f. Nervenheilk.*, 1907-1908, Bd. xxxiv. S. 465.

THE SURGEONS AND BARBERS OF EDINBURGH: THEIR SEPARATION IN 1722.

By CLARENDON HYDE CRESWELL.

With reference to the very interesting "Note on the Incorporation of Surgeons and Barbers," by Mr. R. Scott Moncrieff, which appeared in your issue of December last, may I be permitted to add a few supplementary remarks which may throw further light upon the relations that existed between these anciently-constituted bodies both immediately before and after their separation in 1722.

While a judicious discrimination between loquacity and undue brevity is to be commended, yet it cannot be supposed that the details of this obscure subject are so well known that a knowledge of them, however superficial, can be taken for granted. To be too brief might give rise to misconception, and therefore it is prudent to unravel knots difficult of solution with more care and deliberation than is usually bestowed upon subjects with which the general public are better acquainted.

Mr. Scott Moncrieff in his opening remarks observes, "It must not, however, be concluded from the fact of their official incorporation [the barbers and surgeons] as one body in 1505 that the two crafts came together for the first time in that year, for the deed [the Seal of Cause] shows that for at any rate some time prior to that date they had been closely associated together in the upkeep of 'an altar situate within your College Kirk of St. Geill in the Honour of God and St. Mungo our Patron.'"

Mr. Scott Moncrieff evidently refers to, and bases his assumption upon, that passage in the Seal of Cause which runs, "That where we believe it is well known that *we* uphald an altar situate within your College Kirk of St. Geill," etc. The sentence seems to have been used by the deputation of barbers and surgeons in their application to the magistrates for incorporation, and if one had nothing else to go upon, it would certainly infer that some connection between them had previously existed.

Among the College muniments, however, is a scrap of paper, worm-eaten and soiled with age, conveying these very rights to the altar, not upon the barbers *and surgeons*, but upon the "*Kirkmaster* and *brethren* of the *barber craft*" only. This document, a certified extract of the burgh records, is dated 24th April 1504, and while it confirms the existence of the barbers as a society before their coalition with the surgeons, yet there is nothing to indicate that the latter were in any way associated with them until the union of the two bodies in 1505.

For reasons given later, it appears almost certain that at this early period the barbers were more numerous and of more influence than their intended colleagues. The union of 1505 should not be looked upon, as is customary, as a mésalliance for the surgeons. If we remember that the barber of that day was also the surgeon of the monastery, and thus the first to specialise in surgery, we realise that the coalition which took place was no more than a union between the chirurgeon of the priesthood and the chirurgeon of the laity. The petition would therefore more probably be framed by the barbers, and the allusions to the altar which occur in it no doubt applied to themselves, and were not meant to include the small body of surgeons who formed the original members of the craft.

This is not the place, however, to continue the history of the Corporation from that date, nor even casually to observe its early struggles with the Town Council, the apothecaries, the physicians, and others who interfered with its progress. All these must be passed over in silence while we confine ourselves strictly to the events which ultimately led to the partition of the crafts by decree of the Court of Session.

To understand properly the state of affairs in the year 1682, when the barbers from whom the surgeons were eventually separated were first established, it is necessary to go back to the granting of the original Charter, or Seal of Cause, in 1505. By this Charter the Corporation of Surgeons and Barbers, amongst other

obligations, agreed to furnish the city with a sufficient number of barbers to suit the convenience of the inhabitants, inasmuch as none were allowed to follow the barber craft without the Society's licence.

In *anno* 1648, however, in consequence it was said of the "great prejudice and manifest aspersions the body of Chirurgeons hath sustained by admitting of freemen barbers not being qualified Chirurgeons," they passed an Act that "no barber should be admitted in time coming except he be tryed and found qualified in Chirurgie." As this put the whole of the barber trade into the hands of the surgeons, the simple barber, who had occasionally been licensed by the craft, practically became extinct. Some ten years later, with the approval of the Town Council, the apothecaries were affiliated to the surgeons, and then sprang up a rather complicated society composed respectively of surgeons, surgeon-barbers, and surgeon-apothecaries.

From this point the surgeons, to use their own words,* totally neglected the barber craft, and but for the admission of a single surgeon-barber in 1656 no barber of any kind, either simple or surgeon, was licensed by the craft after the passing of the Act of 1648 until it was reminded of its obligations by the Town Council in 1682.

It can therefore be imagined that in the year last named the number of barbers in the town had considerably diminished, and this led the magistrates to inform the surgeons that unless they supplied the public with a requisite number of skilled barbers, they, the magistrates, would not be answerable for the consequences. In this way, at the magistrates' instigation, the surgeons at once licensed a number of simple barbers, and, with the growth of the population, this body steadily increased, until in 1718, when the action was raised, they totalled, in town and suburbs, no less than 99. This extraordinary addition to the strength of the barbers, who paid an entrance fee of 500 merks, or £28, 2s. 6d. sterling, a sum equal to at least three times that

* When Maitland was collecting information for his *History of Edinburgh* he applied to the surgeons for a note of their Rights and Privileges. After enumerating these, the surgeons, in referring to their arrangement with the apothecaries, said, "The Arts of Surgery and Pharmacy being thus conjoined, the Corporation totally neglected the Barber Craft, which occasioned the Town Council, in July 1682, to recommend them to take some effectual course that the City might be furnished with a competent number of persons skilled in cutting of hair and taking off beards, and that these persons shall be holden as depending on the Surgeons."

amount in our own day, materially contributed to the prosperity of the Surgeons' Corporation, but in spite of the heavy tax thus laid upon them, the barbers had not the slightest say either in the management of the Corporation's affairs or in the administration of its funds. This inequality of governing power seemed to them so unjust that at last they decided to raise an action in the Court of Session in order to ascertain the extent and limits of their rights.

Before the case came on efforts were made to bring about a reconciliation, and committees of both sides were formed to discuss the terms of peace. The surgeons' instructions to their representatives (of whom Alexander Monro was one) were to endeavour to find out the conditions upon which the process might be abandoned "without appearing to have a commission from them" (the College), and to dispense with the barbers' debts, unless it could be otherwise settled. No arrangement, however, was arrived at, and eventually an action was raised by George Manson and seven others on behalf of the freemen barbers.

In opening their case the barbers set forth that the surgeons' Charter of 1694 and the Ratification which followed it should be set aside, inasmuch as they were both made without reference to them, and also because, while they confirmed the rights of the surgeons, who were now joined with the apothecaries, the barbers themselves had been entirely left out. It was also claimed that the Seal of Cause was equally in favour of the pursuers as barbers as of the defenders as surgeons, and that all members, both barbers and surgeons, had equal rights to a vote and to be voted for in the election of the Deacon and other office-bearers, and to the administration of the common funds. The pursuers also said that the inequality of the management of the affairs of the Corporation was manifestly a grievous oppression to them, whose fees for admission since the year 1682 amounted to more than the value of the whole stock then belonging to the Society. The surgeons were likewise charged with making Acts at their own convenience for obtaining money, and then suspending those Acts whenever it suited their purpose. In this manner their patronage was said to have been extended to as many as would pay for it, without respect to their pretensions of right by apprenticeship or being servants to a free barber.

The surgeons replied that only those found qualified by examination could pretend to any privileges of the original Seal of Cause, and that the barbers were only dependent upon them.

In support of this statement they quoted a letter written by James VI. directly to the Lords of Session explaining that the surgeons, out of *pity* and *compassion*, had admitted certain simple persons to be barbers, "to poll, shave, wash, and make aquavite," which, they said, were all the privileges that any barber not qualified in surgery could formerly take advantage of.

The barbers maintained that the two crafts were distinct the one from the other, and ingeniously quoted a passage from the Seal of Cause that "no barber master or servant shall use nor exercise the craft of surgery unless he be expert," which, they said, made it beyond question that he might, without that knowledge, be a barber. The custom of admitting barbers upon petition, covering only a licence to trim and shave, was described as depending upon the arbitrary management of the surgeons themselves, who, in the several Acts of Admission granted to barbers, dispensed their favours in every conceivable way. To some of them the freedom of the trade had been given to the entrant and to his widow, excluding both his children and his apprentices, while in other cases the freedom was granted to the entrant, his widow, his sons, sons-in-law, and apprentices. To one the privilege was only granted during the life of his wife, and yet others, continued the pursuers, who had no more title than the recommendation of a nobleman, are found to have been admitted even gratuitously, and their privileges extended without any rule.

This last hit will be more readily understood after perusing the following letters from James, Earl of Perth, the Lord High Chancellor of Scotland, to Dr. Christopher Irving, a member of the Corporation. In the first of these, dated 4th October 1686, his Lordship says:—

"Sir,—My servant Daniel Valentine being already a freeman of the town of Edinburgh and desirious to set up for a livelyhood as a barber there, but wanting his freedom in that trade, I earnestly recommend his affair to you and desire that at your first meeting with the Society of Chirurgeons and Barbers, you would [tell] them that if they will give him his freedom for shaving and cutting of hair, or what els is propper for a Barber only, I will take it as a particular kindness done to

"Your obedient Servant,

"PERTH.

"DRUMMOND CASTLE."

The second letter acknowledges the kindness done to his servant Valentine, and that "as occasion offers it shall not be forgotten by Your assured friend, Perth."

In continuing their case, the defenders held that the barbers were admitted as dependants upon the surgeons, which could never be understood of co-ordinate members of the same society, and said that they (the surgeons) were unjustly taxed with pride "in not opening their door and making one for the pursuers." The barbers were further charged with being the provokers, and "having waxed wanton by too gentle treatment, did now pretend to insult their Superiors, who were obliged to uphold the honour of their Society, and to keep the successors of the simple barbers mentioned in King James' letter to trimming and shaving, and not allow them to go beyond the line."

After some very plain speaking on both sides the barbers applied for access to the minute books, wherein, they said, it would be seen that they had paid over 140,000 merks since the year 1682, and that the books would also show the misapplication of the money, which to them was a "mighty grievance." After the books had been opened to their inspection the barbers declared that for an uninterrupted period of 150 years simple barbers like themselves had enjoyed the whole privileges of the craft, had frequently been elected Boxmaster (Treasurer), and on more than one occasion had been raised to the Deaconship itself—in fact, were in every way equal to their brethren the surgeons. They also contended that the Act passed by the Corporation in 1648 prohibiting the entry of simple barbers was illegal, it having been made by one part of a society against the other at a time when there were only six barbers and ten surgeons, who took advantage of their superiority in numbers; to which it was replied that no simple barbers were admitted between the Acts of 1648 and 1682, and that it mattered not to them what rights the old incorporate barbers had—*they* were quite another kind of production modelled upon the footing of the Act of 1682. Why, then, inquired the surgeons, "did they pretend to say to those who were their makers, that they ought to have made them in another form, or that they must alter their shape and turn them from shavers into members of an incorporate body? It was no use for them to jangle in words and to say that because they were admitted freemen barbers they must therefore be members of the Incorporation and have its privileges."

Their Lordships, however, found that all Masters should be examined in surgery and anatomy and be capable of exercising both crafts; that the Act of 1648 was consistent with and conformed to the Seal of Cause; and that the title of the barbers conformed to the Act of the Town Council of 1682, which did

not entitle them to the full privileges provided to the Masters of Crafts.

The surgeons then expressed their willingness to relieve the barbers of any seeming hardships they thought they might be under, but the latter asked the Court to make reasonable regulations for preventing such abuses in the future as they then laboured under by the pretended superiority of the surgeons.

A long debate then ensued as to the disposal of the quarterly subscriptions originally intended for the relief of the poor. In endeavouring to get this entirely into their own hands, the barbers declared that no pensions were ever paid to their poor by the surgeons; on the contrary, they always supported their own poor according to their ability. Some of them, they said, were now begging in the streets, "and the children of Alexander Cruickshank, who died in June 1718, were turned by their landlord out of doors, and when they applied to the surgeons they got a crown of charity, but with the express condition 'never to trouble them again.'"

Eventually the Court gave its decree, which, with the exception of some minor details, completely divided the crafts, a decision which probably gave entire satisfaction to neither party. At least, the conciliatory attitude of the surgeons showed no desire on their part for the introduction of such a drastic measure.

In considering some of the points raised by the barbers, it is presumed that the period during which they claim to have shared the privileges of the Corporation equally with the surgeons was the first century and a half of the craft's existence, viz. from 1505 to the passing of the objectionable statute in 1648. The College Records, however, would only carry them as far back as 1581, and as they fail to quote any circumstance prior to that date, in all probability they made no reference to the Burgh Records, from which they might have gained some additional facts.

In looking at the conditions surrounding the union of the two crafts in 1505, we may safely suggest that the barbers were then in excess of the surgeons. The barber, at this time, was a kind of handy man, whose duties were many and various. About the period of which we speak many references to him appear in the Accounts of the Lord High Treasurer in connection with the making and selling of aquavite, and as fourteen shillings were paid to one for "taking furth the Kingis tuth," it is evident that his professional abilities were not confined to the trimming of beards. Then there was the King's barber, who, besides supplying His Majesty with "holland

claith at ten shillings the elm," supplemented his income by selling "crossbowes and daggers." All this, in addition to his clipping, polling, and shaving, stamps him to have been a busy man, whose trade appealed to one and all, from the highest in the land to the meanest citizen. On the other hand, his newly made brother, the surgeon, would not be nearly so much in request, he having to depend more upon the cracked heads and broken bones consequent upon some night brawl in the High Street, or the more serious tumults which were then of no rare occurrence in the Scottish capital.

It is easy, then, to conceive that the barber would be far better known and the more popular of the two, and this may account for the Corporation being almost invariably styled the "*Barber Craft*" whenever reference was made to it in the early days. Almost the first time the Corporation is mentioned in the Burgh Records is in the year 1530, when, at a meeting of the Trades, the "*Barber Craft*" is said to have been represented by a certain John Arras. Again, in 1558, when the crafts furnished a contingent for defending the town, a number were found by the "*Barbers*," while in 1570 the "*Barber Craft*" made a gift of three pounds Scots to the sustentation of the ministry. The same thing occurs in most of the old documents belonging to the College of Surgeons. For instance, a deed of bequest by George Leith, in 1533, of some houses in the High Street is in favour of the "Chaplain of the Honest *Craft* of *Barbers*," and in 1556 a sum of money is acknowledged to have been received from Alexander Bruce, "Dekin of the *Barbers*." Other instances could be cited indicating that the barbers, at that time, were more closely identified with the Corporation than the surgeons.

That the two crafts were distinct for some years after their union is probably correct, for it cannot be supposed that the mere granting of a charter transformed the surgeons into barbers. It is more unlikely still that it turned the barbers into surgeons, and whatever claim the former may have had to blood-letting before *anno* 1505 was forfeited by the Seal of Cause, for as bleeding was a surgical operation requiring some knowledge of anatomy, the surgeons would claim it as belonging to them alone. The trades, however, can scarcely be said to have been kept separate after it became the custom for both to be pursued by the same individual, and this really began soon after the union, for as the barber became expert and passed whatever examination was required of him to assume the *rôle* of the surgeon, instead of discarding his

razor in favour of the scalpel, he continued in the practice of both crafts simultaneously. Likely enough this led to the extinction of the simple barber, for it may be reasonably assumed that very few failed to pass the test. Be that as it may, it is certain that about the middle of the sixteenth century the title of the Corporation was subject to a complete change. We no longer read so much of the barber craft nor of the barber; slowly but surely he is superseded by the surgeon, or, to be more accurate, the surgeon-barber, until in 1567 we find a charter granted by Queen Mary to the surgeons in which the barbers are ignored altogether. Later on, in the Decreet Arbitral, Gilbert Primrose is described as Deacon of the "*Chirurgeons*," and it was the "Craft of *Chirurgeons*" that was granted pre-eminence amongst the trades in 1583. Turning to the surgeons' own records we find the names of the whole of the Masters of the Crafts in 1581, and as they were all surgeons or surgeon-barbers, it is quite clear that no simple barber existed at that date. The barbers, however, in their action in 1718, claim that one on this list who was elected deacon in 1584 was only a simple barber because of his inability to write. This certainly seemed to be one to the barbers, for according to the Seal of Cause no master was permitted to "tak ane prenteis or feit man in tyme cuming to use the surregeane craft without he can baith wryte and reid." In turning up the minutes of that date, sure enough we find the deacon, Henry Lumsden by name, signing an Act "with my hand at the pen" (led by the notary), but, as he is reported in the Burgh Records as one of the "*Chirurgeons*" who attended a wounded man at the instance of the Town Council in 1580, the charge must be dismissed.

It is therefore probable that the original simple barber died out soon after *anno* 1550. As the Surgeons' Records describe the condition under which every one of their members entered the society, we are able to fix the date of his reappearance, and also to give an account of the number of simple barbers, simple surgeons, and surgeon-barbers so entering, from 1581 down to the year 1648, when the former were prohibited the *entrée* of the craft. Of the simple barbers Alexander Rattray was the first. He was admitted to the "barber craft" in 1584, with permission to "clip, cow, and shave only and not to use any point of chirurgie." After eight had been admitted on these conditions in the space of twenty years the terms were slightly modified. Admission in the future was to be "without prejudice to him to crave admission to the *art of chirurgie* when it shall please God that he be able to discharge his

duty therein." Under these combined headings thirty-five were admitted, of whom twenty-two subsequently passed the "tryall," and so became surgeon-barbers. Ten entered as Masters of Surgery only, and nineteen were admitted masters of both crafts at the same time.

With regard to the barbers' claim that their predecessors equally shared the privileges of the craft with the surgeons, careful investigation certainly leads to that impression. At any rate, during the period under review, viz. 1581-1648, three simple barbers held office as Boxmaster (Treasurer) on nine occasions, and seven barbers, who became surgeons afterwards, occupied the same post on fourteen occasions. To this extent the barbers were permitted to hold office, but the position of Deacon or Councillor was never held by any but a surgeon. What the privileges of the barbers were prior to 1581 cannot even be surmised, but in 1601, 1605, 1606, and 1607 they were certainly present at the meetings and voted in the election of office-bearers; in fact on one occasion they were in a majority of six to four.

If they attended the meetings during these years they were probably present at other times, for although the terms generally employed in the minutes describing the meetings are that "the whole brethren of the *Chirurgeons*" convened in the Deacon's house, or that the "Deacon and Masters of the *Chirurgeons*" convened, etc., it must not be taken that the barbers were not also there, for the headings of the minutes do not always agree with their body. For example, in a list of the names of the "haill Masters of the art of *Chirurgie*" given in December 1601, there appear the names of two undoubted simple barbers. So many slips, contradictory in themselves, occur in the early minutes that it is sometimes difficult to arrive at a definite conclusion as to what is really meant, but, judging broadly from the data at our disposal, there is no reason to doubt that at the time in question the barbers had equal privileges with the surgeons, with the exception, perhaps, of actually occupying the Deacon's chair.

So much for the barbers of old. But the simple barbers of 1682 were raised upon quite a different footing to their predecessors, that is if they can seriously be said to have had any, for if we carefully distinguish between the old simple barber and those entering the barber craft preliminary to becoming surgeons, we shall find that the appearance of the former, previous to 1682, was so spasmodic, his life so transient, and his numbers so small,

that no actual body of them can be said to have existed until the formation of the one above mentioned.

When the Town Council had their attention called to the inconvenience the public were put to through the scarcity of barbers in the town, the magistrates plainly told the surgeons that unless they quickly remedied the defect "they would not espouse nor own the interest of the Calling in case any attempt should be made by application to superior judicatories for causing the Incorporation to receive into freedom such number of barbers as they should think fit." The magistrates also declared that if the Calling would voluntarily admit a competent number of persons skilled in barber craft at present or at any future time, "that these persons should be holden as depending upon the Incorporation, and be liable to all its Laws and Acts." This was the foundation, then, upon which the barbers of 1682 were established. Their Acts of Admission, although varying in detail, are all alike in principle, and contain no expectancy of their entering the craft of chirurgie "when it shall please God that they be able to discharge their duties therein," as we find mentioned in Acts of a former date. At the time they were raised there were nine barbers' shops in the town, six of which were kept by surgeons and three by "Relicts" or freemen's widows; none of the old simple barbers, with whom they might have claimed a kinship, therefore existed. In taking into consideration all the facts of the case, how the simple barbers of 1682 could expect, let alone demand, equality with the surgeons is really surprising.

Taken altogether, the numbers of the Incorporation were very small, seldom exceeding fifteen at one time. Once, in 1647, they had dwindled down to eight. Although the majority of these were barber-surgeons, there were always a few surgeons content to follow their own profession alone.

The notion generally accepted, that the separation was brought about by the surgeons, cannot be entertained for a moment. They did their very best to avert it, and, after the Court had decided some points in their favour, endeavoured to settle the question in a friendly way. The barbers, however, refused to listen, and preferred to place themselves in the hands of the judges. After all, one cannot see that the barbers had so much to complain about. Their fees, certainly, seemed very high, and probably required adjusting, but their claim for equal votes and privileges with the surgeons was for obvious reasons (especially when it is remembered that the barbers were in a majority of about three to

Fig. 1.

one) out of the question, and although their position in having no voice in the affairs of the Incorporation may have appeared to them a hardship, yet many larger bodies occupy a similar position at the present day. When the action was first raised in 1718—it lasted four years—separation was probably never thought of. Its adoption was a loss to both parties. By it the barbers forfeited caste and the surgeons lost something infinitely more substantial, viz. cash. Deprived of their princely revenue, the direct effect of the separation was to plunge the surgeons into such financial difficulties that, after unsuccessfully offering their hall and lands in the High School Yards for sale, they were perforce obliged to turn the former into dwelling-houses, retaining but a single room for their own conveniences. The land adjoining the hall was then cut up into feus, and eventually developed into the famous Surgeons' Square. In this way a small yearly income was assured, but the Incorporation was many times reduced to the utmost necessity ere they recovered from the effects of their separation from the barbers.

One word in conclusion. In the centre of what is now left of Surgeons' Square still stands the old Surgeons' Hall. Although it has passed through many vicissitudes and phases, some parts of the original building still remain. Conspicuous amongst these is the doorway, surmounted by the date, 1697 (Fig. 1). Through its venerable portals once strode Menteith, while Eliot, M'Gill, and Monro were familiar with its features and simple, unpretending design. A century later it was well known to the Bells, and in more modern times Liston, Knox, and Syme, though perhaps not in friendly converse, may have cruelly criticised its architectural deficiencies. When the new College was built in 1830 the oak panelling of the old hall was transferred to the new one, but the claims to preservation of this old doorway with its sculptured lintel seem to have been overlooked or forgotten.

The whole building, now long condemned, is the property of the University, and although in a few years at most this old landmark of the surgeons must necessarily pass away, there is yet time to prevent an act of sacrilege.

Sources of Information.—1. Minute Books of the Royal College of Surgeons. 2. Charters and Documents in possession of the Royal College of Surgeons. 3. Burgh Records. 4. Accounts of the Lord High Treasurer of Scotland. 5. Process in action Barbers *v.* Surgeons registered in Books of Council and Session, 1722.

MEDICAL HISTORY AT THE INTERNATIONAL CONGRESS.

By JOHN D. COMRIE, M.A., B.Sc., M.D.,
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THE importance that attaches to the study of medical history obtains every year increasing recognition. In most of the important Universities of Germany, France, Italy, and Holland there have been for some time past professors of this subject; in America the libraries of the medical schools compete eagerly for the works of the old medical authors, which are passing in a constant stream across the Atlantic; and even in Edinburgh the fact that classes of forty and fifty students attend a voluntary course upon medical history in the University proves that the rising generation of practitioners recognises the interest and value of this subject.

For the first time in the half-century during which international medical congresses have been held, the meeting that takes place in August 1913 at London will have a section devoted to this subject. The sectional meetings will be devoted mainly to reading papers on subjects of historic interest, of which some seventy have been promised by various English and continental writers. For example, the Presidential Address of Dr. Norman Moore will deal with the "History of Medicine in England"; Professor Sudhoff, Professor Sticker, and Dr. Raymond Crawfurd will discuss respectively "The Origin of Syphilis," "Leprosy in the Middle Ages," and "Pictures of the Plague," and will contribute useful information as to the ravages of these diseases in bygone times. Professor Holländer, Sir W. Osler, and Professor Corsini will describe "The Relations between Art and Medical History," "The Earliest Printed Medical Books," and "Painting in Relation to Medicine." Professor Max Neuburger, Dr. Lewis Jones, and Sir Shirley Murphy will deal with the interesting practical subjects of "The History of Clinical Diagnosis," "The History of Electrical Therapeutics," and "The Growth of Public Health Legislation." The practice of medicine and surgery in very early times will be considered in papers by Professor Elliot Smith, Mr. Henry S. Wellcome, Professor Meyer Steineg, Dr. J. S. Milne, Dr. John D. Comrie, and Dr. Barbour, who will deal with "The Evidence of Disease in the Remains of Ancient Egyptians," "Representations of Surgical Instruments upon Egyptian Tombs," "Surgical Instruments of Antiquity," "Græco-Roman Instruments," "The Clinical Apparatus of Hippocrates," and "The

Gynæcology of Soranus of Ephesus." There will be many papers of a critical literary type, and probably at least one discussion in common with the section of Preventive Medicine dealing with the factors that determine the rise and spread of epidemic diseases.

One of the most interesting features of this section, to which the vast historic treasury of London particularly lends itself, will be the collections that are being organised for the visual display of the medicine of earlier days.

The Royal College of Physicians—within whose Hall in Pall Mall the meetings of this section are to take place—will show a large collection of pictures and relics which it possesses, and which various Fellows are contributing, reminiscent of great English physicians in the past.

The Trustees of the British Museum, where there are preserved some of the finest ancient medical MSS. in existence, have decided also to exhibit in the King's Library a collection dealing with Medical History. It will be organised under the superintendence of Sir F. Kenyon, and will include some beautiful examples of illustrated medical MSS.; specimens of early medical MSS. of England, Scotland, and Ireland; many of the earliest printed medical books which possess some special interest connected with their author or their subject; coins of Ancient Greece and other countries which have some medical bearing; and personal memorials and portraits of leading British medical men.

The principal exhibition is, however, the museum affiliated with the Congress, which has been collected mainly by the historical enthusiasm and generosity of a private individual, Mr. Henry S. Wellcome, aided by Mr. C. J. S. Thompson. This museum, the result of many years of historical research and labour, is situated in Wigmore Street, and was opened by Dr. Norman Moore on 24th June, to remain open till after the Congress has met in August. Presenting as it does a great deal that interests both the medical historian and the medical antiquary, it should prove a highly popular part of the Congress. So far as the antiquary is concerned there are many objects of *virtu* and personal relics, in some instances the property of the organiser, in other cases loaned by individuals and corporations both in London and abroad. But the chief value of this museum lies in the careful grouping of the many instruments, statues, pictures, and collections of medicinal substances which are displayed with the view of tracing the steady development of the

healing art. This is, after all, the main function of historical study.

In the entrance hall one finds a display of various objects of primitive medicine; for the medicine of the primitive race is comparable in its type, and presumably also in its details, to the medicine of prehistoric man. The masks of devil-dancers, a witch-doctor's hut from Central Africa, medicine baskets and quaint brass instruments for primitive surgery, with skulls showing trephine holes, and flint saws from New Guinea, suggest the beginnings of medical succour among the distant inhabitants of Europe. As a contrast to this—and out of strict chronological order—there is displayed in the next room a collection made by Dr. Louis Sambon showing one of the most important developments of modern hygiene where it comes into contact with this barbaric type of medicine, viz. a series of preparations and pictures illustrating the parasites which render so much of the tropical world uninhabitable to the white man, and whose repression has been one of the main factors in the spread of civilisation. The parasites and their hosts are shown in bottles and by microscopes, while excellent drawings of various biting flies, worms, and gnats, together with ingenious schemes illustrating modes of transmission, adorn the walls.

A large, well-lighted hall comes next in order, and contains in its central space a series of statues and images which have been collected literally from China to Peru to show the earliest conceptions of historic medicine and its legendary representatives. Most of these are, of course, models of statues preserved in various national museums, and in the aspect of these tutelary deities the visitor catches a reflection of the ideas entertained regarding the position and functions of the healing art. Here he sees the squat and malevolent-looking deities of the ancient Mexicans and Aztecs, the sage Dhanvantari of the learned Hindoos, the mystic Thoth and benevolent Imhotep of Early Egypt, down to the gracious Apollo and beneficent Asclepios, who represented the health-giving sunshine and fresh air to the ancient Greeks. The earliest authentic medical practitioner is shown in a replica of the life-size statue preserved in the Ethnographical Museum at Leiden of Auta, a pleasant, round-faced, stout little man, clad in a linen ephod and sandals, who lived under the Eighteenth Egyptian Dynasty about 1500 B.C., a contemporary of Georg Ebers' "Egyptian Princess." Various classic busts of Hippocrates, Galen, and other early practitioners are also shown.

In the centre of this hall there is a most interesting model of a Greek shrine containing a collection of Graeco-Roman votive offerings. It was customary when a sufferer had been healed by residence in one of the health temples of Asclepios—the sanatoria of the old Greek world—or after intercession of the god, that he should, in addition to a money gift to the priest, set up a mural tablet inscribed with a record of his cure; or, at all events, suspend in the shrine a model of the part which had been affected. These pathological representations are mainly of baked clay, and most of those shown have been unearthed by Dr. Louis Sambon either on the Tiber Island at Rome, where stood a temple of Asclepios in the second century B.C., or from the site of the Temple of Maternity at Capua. Some of these casts are purely conventional representations of parts of the body, but others, which are of great interest, have been carefully modelled and painted to show pathological conditions. Among the latter appear, for example, several models of the post-partum uterus, placentæ, a double uterus, a uterus with polypus, various tumours, ovaries, an arm with psoriasis, intestinal conditions, venereal diseases, and variously painted eyes.

In the same hall are many cases of ancient instruments, especially Roman knives, probes, artery forceps for applying the Celsian ligature, trocars, eye instruments, shears, etc., exhumed mainly at Bosco Reale. Many instruments of a later date have been lent by the Royal College of Surgeons and other bodies, and there is an excellent collection of birth-stools and similar appliances. A large assortment of microscopes of all ages shows the development of this important instrument from its invention in the seventeenth century; and there is also a good collection of appliances for anæsthesia. An interesting attempt has been made to treat some of the surgical instruments in an historic manner, and show the changes of form and function that they have undergone, by displaying side by side the same instrument at various epochs with pictures of its mode of use, quotations from ancient authors, etc. For example, the vaginal speculum is treated in this manner; its Talmudic and ancient Indian form as a joint of bamboo or a gourd shaped like "the teat of a cow" is shown developing into the silvered tube of the Fergusson instrument; in the same case are shown models of the Pompeiian bivalve and trivalve dilators, and a picture of the manner in which Avicenna the Arab writer recommends that this instrument should be used, the physician looking in a mirror so as to avoid offending Eastern susceptibility; side by side, too, is

shown Marion Sims' speculum with a large pewter spoon, and a cutting from the article in which he describes how he originally made this useful instrument from the simple kitchen utensil.

In the same section are shown some medicine cases and instrument boxes that are of interest because of their individual associations. Edward Jenner's medicine chest has been lent by his family. Livingstone's Bible, walking stick, and instrument case are also there, with Mungo Park's case. The medicine box of Lord Nelson stands alongside of the smaller one used by the Duke of Wellington. The latter contains twelve bottles, and it is significant to note that the largest of these contains bicarbonate of soda. Probably, therefore, the Iron Duke suffered from acid dyspepsia, and a still further indication of defective digestion is given by a prescription shown in the same case which he had written for himself on the date 5th September 1848 (when he was 79 years old). It consists of one grain of rhubarb, one grain of James' powder, one grain of calomel, one grain of Castile soap; three such pills to be sent at once. There is also the magnificent set of silver-plated instruments left by the dentist of the first Napoleon.

An impressive mode of exhibiting some of the collections of furniture, instruments, and dresses has been to set apart, here and there, an alcove or room in which everything belongs to one period, and forms part of a simple scene. For example, in one of these rooms the visitor steps into a dingy, dusty apartment where has been gathered together a heterogeneous collection of ancient crucibles, retorts, alembics, stuffed alligators suspended from the roof, and so forth. In short, one has no difficulty in visualising the workshop of a mediæval alchemist, leech, and philtre-monger. Close at hand another room has been fitted up to receive a unique collection discovered in the North of England, where, in a little country town, there had happened to be preserved a druggist's shop of the eighteenth century. The bottles are on the shelves, the simples in the drawers, the scales on the counter, and even a medicine bottle done up in paper and labelled, ready for sending to a patient, just as they all stood two hundred years ago. A few paces further on we enter a much more elaborate and fashionable Italian apothecary's shop with appurtenances of similar date; on the shelves stand rows of china pots with painted labels of the drugs that each contains, and in the body of the shop are handsome measures for weighing out and dispensing the prescriptions.

One may enter in another room the private laboratory of the great chemist Liebig fitted with the stove, crucibles, flasks, etc.,

which were used by that illustrious man. As one regards the extreme simplicity of the apparatus, with some of which one may assume that chloroform and chloral were discovered, the extract of beef first made, and the famous researches on alcohols and on agricultural chemistry carried out, one is constrained to wonder at the smallness of the material that genius needs for the exercise of its activity.

Still another room is fitted up after the one in the Stedelijk Museum at Amsterdam to show a birth chamber of the 18th century with figures of patient, nurse, etc., and furniture appropriate to the period, even the tiles on the floor being correctly represented. Still another large room has been fitted up with life-size figures to show a scene portrayed in a sixteenth-century medical manuscript where in a hospital room with beds and several patients, the figure of a surgeon dressed in costume of the period is shown attending to his duties. These and several other tableaux have been prepared with the most assiduous care and attention to details, so that they bring vividly before the visitor the epochs of medicine with which they are concerned.

A great number of pictures, mostly on loan, are distributed over the walls of several rooms. Of these some are original portraits or engravings of famous men, others are originals or copies of paintings showing localities, such as one of John Hunter's birthplace, lent by the Faculty of Physicians and Surgeons in Glasgow. Naturally, this cannot be a complete collection, but many of the subjects are individually interesting. Perhaps the most striking feature of this pictorial display, and, indeed, one of the strongest features in the museum from the didactic historical point of view as distinguished from the antiquarian part, is a collection of paintings by Mr. Ernest Board, the talented young historical painter, who was recently commissioned to paint a panel for the House of Lords, and who is finishing some of the scenes which the late Mr. Abbey had begun for the Boston Library. This comprises a series of important epochs in about forty pictures dealing with the history of medicine carefully studied from the available records. At the beginning of the line is depicted a primitive cave man in the forest sucking a serpent's bite; after this come pictures showing a visit in Egypt to the temple of Thoth, and patients lying in the abaton of a Greek temple for Asclepian healing by incubation. Hippocrates, "the father of medicine," lecturing beneath a plane tree to his students at Cos, with the blue Ægean sea stretching away in the background, forms another

pleasing scene. Dioscorides, writing his "Materia Medica," to which we owe the knowledge of the bulk of our vegetable drugs, represents Byzantine medicine. Arabian medicine is portrayed by Rhazes, the first describer of smallpox and measles, working in his chemical laboratory; and by Abulcasim, the surgeon, to whose authority was due the preference of the cautery as a hæmostatic for many centuries. The troubled searching after truth of the Middle Ages is indicated by scenes of Roger Bacon in his cell, and of Albertus Magnus lecturing on astronomy at a market cross. Mondino, the reviver of anatomical study, is shown lecturing in Bologna University at the beginning of the fourteenth century, and Guy de Chauliac, the great mediæval surgeon, is portrayed fifty years later performing a Cæsarean section at Avignon (after an illuminated MS. of his works); Paracelsus lecturing; the earliest recorded major abdominal operation at Vienna in 1569; Galileo, to whose inspiration at Padua his pupil, Harvey, probably owed his ideas about the circulation of the blood; Jenner inoculating cowpox; Lavoisier explaining his discovery of oxygen to his wife; and Laënnec using the stethoscope for the first time, bring the series of historic pictures down to the nineteenth century. Still later pictures, which are for the most part faithful portraits of the groups they show, represent Morton's first tooth-extraction under ether; Liston's operation three days later under that anæsthetic before an audience, among whom is the youthful Lister; the same Lister in maturer years using his carbolic putty at the Royal Infirmary of Glasgow; and Pasteur, the father of bacteriology, in his laboratory.

Whether it be regarded as a collection of valuable articles of antiquarian medical interest, or as a thoughtful exposition of medical history by pictorial and plastic art, this museum is an exhibition of absorbing interest to the visitor, and of unbounded credit to the historic sense and organising genius of its possessor.

REPORTS OF SOCIETIES.

Edinburgh Medico-Chirurgical Society.

A MEETING was held on 4th June 1913, Dr. Playfair in the chair.

Dr. R. A. Fleming gave a paper on "*Ante-mortem Thrombosis in the Right Heart*," which will appear in the *Journal*.

In the discussion which followed, Dr. Goodall said that most of those present must be familiar with those tragedies which occurred in pneumonia, where a patient, after having been safely tided over the crisis, began to suffer from severe dyspnœa, and died sometimes in a few seconds, sometimes in a few

hours. He had made observations on the coagulation time of the blood along with Dr. Ewart, and had found that the coagulation time was always shortened, and that the acceleration progressed till the crisis was reached. Sometimes there was an abrupt increase of the coagulation time just before the crisis. None of the cases in which they had found a coagulation time of less than one minute survived. After the crisis the coagulation time gradually lengthened out to the normal. Blood-plates were an important source of thrombokinase.

Dr. W. T. Ritchie said that he agreed in the main with Dr. Fleming's conclusions. He would be inclined to pay special attention to duskiness of the ears, lips, and nose, and to weakness of the first sound as indications of dilatation of the right heart. He thought that digitalis and strophanthus were not necessarily indicated in every case of pneumonia. In extreme cases these cardiac tonics should be administered intravenously.

Dr. Eason advocated the use of potassium iodide in pneumonia. It acted as an anti-coagulant, and had other beneficial effects as an expectorant.

Dr. Ninian Bruce gave a communication on "*Multiple Neuromata of the Central Nervous System, their Structure and Histogenesis, with a Review of the Present Position of the Neuron Theory.*" He first described the case of a man who had suffered from spastic paraplegia and contractures from birth, and had died at the age of 30. Neuromata had been found throughout the nervous system. In the cord these consisted of rounded whorls of axis cylinders. Nerve fibres could be traced from them along the blood-vessels, and could be followed from the anterior nerve roots round the periphery of the cord into the white matter. There were also nodules in the pons and medulla. These were not circumscribed, and also differed from the cord nodules in consisting of fusiform cells, which were often placed end to end, forming nerve chains. The case which at first sight appeared to support the cell-outgrowth theory of nerve development was in reality a very strong demonstration in favour of the peripheral theory. Functional activity was necessary before nerves were completely developed, so that it could neither be said that the neuron theory had had its day, nor that there was no foundation for the cell-chain theory.

Sir Thomas Clouston congratulated Dr. Bruce, and remarked that his results were one more instance of pathology shedding light on the dark places of physiology and embryology.

Edinburgh Obstetrical Society.

A MEETING was held on 11th June, Dr. Haig Ferguson, President, in the chair.

Dr. Berry Hart read a paper "*On the Pressure Experienced by the Fœtus in Utero during Pregnancy: with Special Reference to Achondroplasia,*" which is published in the June number of the *Journal*.

Dr. Barbour believed that Jansen had approached the subject from the mechanical point of view, Dr. Hart from the philosophical. He agreed that it was impossible to see how the condition could be due to local pressure, though he thought that Dr. Hart came up against an equally great difficulty when approaching it from the standpoint of the extrusion of the polar bodies.

Dr. Ballantyne said that Jansen stood for a long line of pressure views most of which were difficult to entertain. He thought it possible, however, that local pressure might be an explanation of congenital deformities in some cases, *e.g.* the absence of one pectoralis major as the result of pressure of the child's hand. So, with an exposed basis cranii, the changes present in anen-

cephaly might be attributed to pressure. He was never able to follow Dr. Hart's applications of Mendelism.

Dr. Brock believed that Dr. Hart's suggestion had great possibilities of application in other directions. It might help us in our study of cancer from the biological or genetic standpoint.

Dr. Haig Ferguson read a paper on an "*Unusual Case of Hydatid Mole dealt with by Abdominal Hysterectomy.*" The patient, 49 years old, had been married for eight years, and had had three abortions previously. She missed two periods, and on 27th November 1912, after an accident, commenced to bleed, This continued up to the time of the operation, 22nd December. When seen then there was severe anæmia, breathlessness, exhaustion, and an enlarged uterus extending in the midline up to the umbilicus. There was free fluid in the abdomen. Pregnancy was present, and the diagnosis lay between a fibroid uterus associated with pregnancy, placenta prævia and hydatid mole. In view of the uncertainty of the diagnosis, the free fluid in the abdomen, possibly indicating uterine erosion, the age of the patient, and, in addition, the danger which forcible dilatation of the rigid cervix would have meant to an exhausted woman, supravaginal hysterectomy was performed. Recovery was good. There were only four other cases on record where hysterectomy was carried out for hydatid mole.

Dr. J. W. Ballantyne showed another specimen of *hydatid mole in utero.* This was obtained post mortem from a woman 47 years old, who died from hæmorrhage immediately after admission to hospital. She was three months pregnant. The uterus was the size of a seven months' pregnancy.

Dr. James Young gave a lantern demonstration on the *pathology of hydatid mole* as studied in these two cases, which provided a unique opportunity. In the first case the uterus was 5 in. × 4 in. On section the wall was about one-third of an inch thick, and was expanded uniformly by the mass of hydatidiform villi imbedded in blood-clot. There was no macroscopic evidence of erosion of the muscle. Towards the front of the section the uterine cavity was seen filled with blood-clot. Separating the mole from it there was a thin layer of tissue, the decidua reflexa, whilst on the other side of the cavity there was the decidua vera. It was thus seen that the mole was still imbedded in and enclosed by the uterine mucosa. On microscopic examination the expanded villi were seen to lie close up to the muscular wall, being separated from it by a thin layer of decidua, in which the vessels were expanded, and in which there was extensive hæmorrhage. Throughout the uterus there were vascular changes similar to those which Dr. Young has elsewhere shown to invariably accompany chorionic activity. Whilst at no place was there any evidence of an erosion of muscle, this was softened and degenerated in places as the result of the chorionic action. The decidua reflexa consisted of a layer of tissue showing marked fibrinous degeneration.

The second case showed similar appearances. The uterus was the size of a seven months' pregnancy. The cavity of the uterus was seen towards the upper part of the divided uterus, and from it the mole was separated by a decidua reflexa thicker than in the last specimen. In it decidual cells were evident. Here again there was a definite decidua vera and decidua serotina. Microscopically there was no evidence of a malignant invasion of the muscle.

The most important point revealed by the two cases was the fact that the hydatid mole could reach a large size whilst it was still imbedded in the uterine

mucous membrane. The severe haemorrhage present was due to the erosion or rupture of the reflexa. When this occurred the entire and extensive intervillous space filled with circulating maternal blood was tapped, and it was easy to see how the bleeding would continue until the mole became extruded or was removed. Not till then could the uterus retract, and thus cause arrest of the bleeding.

Dr Berry Hart thought that no exception could be taken to the manner in which Dr. Haig Ferguson had treated his patient. Hysterectomy under the circumstances was the best method.

The Scottish Otological and Laryngological Society.

THE Society met in the Victoria Infirmary, Glasgow, on Saturday, 31st May. Dr. Brown Kelly in the chair.

Dr. Brown Kelly contributed a paper on "*Nasal Thermometry*," a method of determining the influence of the nose on the temperature of the inspired air, and demonstrated its use. Tables were given showing the difference in temperature between the inspired and expired air, and the variations which occurred in varying degrees of potency of the nasal passages. Dr. Brown Kelly also showed a number of patients.

Dr. Albert A. Gray gave a lantern demonstration tracing "*The Evolution of the Round Window and the Aqueduct of the Cochlea from Reptiles to Birds and Mammals.*" The varying size of the aqueduct of the cochlea and the relation of the round window to the cochlea and to the aqueduct at different stages of evolution were clearly shown. Dr. Gray also gave a microscopic demonstration of the changes in the labyrinth found in cases of otosclerosis and deaf-mutism. He described, too, a nerve ganglion in the human temporal bone which he had discovered, and which had been hitherto unrecognised, showing microscopic preparations.

Dr. J. R. Drever showed two patients with *chronic œdema of the face.* In both there was purulent nasal discharge. From this an autogenous vaccine had been prepared, and in both the use of this has been followed by beneficial results to the facial as well as to the nasal condition.

Dr. J. G. Connal showed a woman on whom he had operated for *aural suppuration with labyrinthine symptoms.* The radical mastoid operation was performed, and a fistula of the external horizontal canal was found. No pus came from the fistula, and no granulations were present in the neighbourhood. Dr. Connal did not, therefore, open the labyrinth. The woman recovered. An interesting discussion took place in reference to the indications for labyrinthotomy in middle ear suppuration. There is still a good deal of diversity of opinion on this subject.

Dr. W. S. Syme reported at some length a case of *otogenous temporo-sphenoidal abscess* in which the abscess capsule, a very thick one, had been removed by operation during life. The abscess had evidently been present for some considerable time, and only gave rise to symptoms after the youth had received a blow on the head. The abscess was opened and drained, and two days later he became comatose. The drainage tube was removed, and the opening in the dura enlarged. A necrotic mass presented, and on removal was found to be the capsule of the abscess. The patient did well for six

weeks, and the abscess cavity filled up, but he ultimately died with a second abscess in the frontal region.

Other interesting cases were shown by Drs. Walker Downie, J. L. Howie, James Adams, Albert A. Gray, J. G. Connal, and W. S. Syme.

It was decided to hold the next meeting in the Royal Infirmary, Edinburgh, in November, under the chairmanship of Dr. J. D. Lithgow.

RECENT ADVANCES IN MEDICAL SCIENCE.

MEDICINE.

UNDER THE CHARGE OF

W. T. RITCHIE, M.D., EDWIN MATTHEW, M.D., AND J. D. COMRIE, M.D.

Banti's Disease.

In view of the diverse opinions that have been expressed regarding the nature and pathogenesis of Banti's disease, three of the most recent contributions by Italian writers—Banti (*Lo Sperimentale*, lxvi. 91), Cattoretti (*Ibid.*, lxvii. 25), and Luzzatti (*Rivista Ospedaliera*, 1913, iii. 261)—are of interest.

Banti has defined the disease as a primary splenomegaly, with anæmia and with secondary hepatic cirrhosis, owning no obvious cause and pursuing a very chronic course. Albu, Naunyn, and others have regarded the affection as nothing more than a common cirrhosis of the liver, associated with secondary enlargement of the spleen. In some cases of Banti's disease, however, the liver is not cirrhotic, and in others the spleen is affected for 8 to 10 years before the liver. According to Luzzatti, the view advanced by Gilbert and Lereboullet, namely, that the disease is a biliary cirrhosis with splenomegaly, is disproved by the marked differences in the clinical features of the two affections. Other writers (Ramoino and Foà) believe that both the splenomegaly and the hepatic cirrhosis own a common cause, which is probably of intestinal origin. But in the earlier stages of Banti's disease both the liver and the intestines are usually healthy, and if the disease were of intestinal origin it is difficult to understand why splenectomy should effect a cure. Galvani and Guicciardi, and also Maragliano, although admitting the splenic origin of the anæmia, believe that the hepatic cirrhosis is merely an accidental complication in the course of the disease. Other writers maintain that Banti's disease is due primarily to phlebitis of the splenic and portal veins, and that this may be of syphilitic, and according to Chiari and Marchand of congenital syphilitic, origin. One problem in particular that is still unsolved is the relation of Banti's disease to splenic anæmia. Luzzatti points out that in their clinical and anatomical features the early stages of splenic anæmia and of Banti's disease are identical. Does splenic

anæmia represent merely one stage of Banti's disease, or are the two diseases essentially different? Even Banti does not give a decided answer to this question.

According to Banti, many different diseases are included in the group designated primary splenomegaly, and likewise in that of chronic hæmolytic icterus. Hæmolytic splenomegaly or Banti's disease, however, should be regarded as a distinct entity, having the following fundamental characters:—Splenic enlargement of considerable degree, chronic and progressive anæmia due to excessive hæmolysis, a slight degree of hæmolytic jaundice, the dependence of the hæmolysis (and the resultant anæmia and icterus) upon perverted functional activity of the spleen, and complete and permanent cure after excision of the spleen. According to Banti, the true *etiology* of the disease is still wholly obscure. Syphilis, alcoholism, and malaria are not causal factors. It is not a congenital or a family disease. It occurs more frequently in young persons than in adults. Bacteriological examination of the blood and spleen fails to reveal any micro-organisms.

Clinical Features.—The initial symptoms, according to Banti, are usually anæmia and enlargement of the spleen. Jaundice does not usually ensue until many years later. All the subjective phenomena are referable to the anæmia: there are none related to the spleen and the liver. In the course of the anæmia there are periods of remission and of exacerbation, the former being either spontaneous or resulting from the administration of iron or arsenic. The exacerbations are usually accompanied by further increase in the volume of the spleen and liver, and by jaundice. In the course of time the anæmia becomes progressively more intense, and after the lapse of a variable number of years it causes the patient's death. As regards the condition of the *blood*, the anæmia is accompanied by all the usual secondary phenomena, and when it is pronounced there may be an intermittent febrile temperature. The erythrocyte count varies from three to four millions during the phases of remission, to about one million during the exacerbations of anæmia: the colour index is below 1: poikilocytosis, polychromasia, and granular degeneration of the red corpuscles are observed: normoblasts are infrequent. As a rule there is no change either in the absolute or relative numbers of the leucocytes, but during the most severe phases of the disease a few neutrophile myelocytes may be detected. The resistance of the erythrocytes to NaCl is lessened. When tested by all recent methods, the blood serum is found not to be hæmolytic towards the erythrocytes of the patient or of those of other anæmic individuals. In consequence of the anæmia there is a decided tendency to epistaxis, hæmatemesis, and other forms of hæmorrhage. The *spleen* is always enlarged: it is firm and painless, has a smooth surface, and its anterior pole usually extends forwards to about the mesial line of the abdomen. The *jaundice* varies in

intensity from time to time, but is never severe, and the stools retain their normal colour. The *liver* becomes enlarged in the course of time. The *urine* always contains urobilin, which is increased in amount and is associated with bilirubin when jaundice supervenes. In some instances a terminal ascites appears.

The disease runs a chronic course of many years' duration. Splenectomy has been performed after the disease has lasted for 15 years (Banti), for 8 years (Umber), and for 3 years (Micheli). Death has occurred after the disease had lasted for 6 years (Lintvarew) and for 9 and 12 years respectively (Banti). According to Banti, the post-mortem evidence demonstrates that the pathological changes are essentially localised in the spleen and in the liver. The morbid appearances in these organs do not represent primary structural changes, but are simply the manifestations of exaggerated hæmolysis and bile production, and are similar to those observed after experimental hæmolysis.

The clinical and pathological features of two new cases are described by Cattoretti. His first patient, a woman aged 56, died about ten months after the onset of the initial symptoms. At the autopsy the spleen weighed 1100 grammes, while the liver was not cirrhotic. His second case, a woman aged 48, had many attacks of hæmatemesis, and died about one year after the onset of symptoms. The spleen in this case weighed 700 grammes, and presented very extensive fibrosis of the follicles, the pulp, and the larger blood-vessels; the liver was slightly cirrhotic. Cattoretti recognises three periods of the disease. The first period is characterised by enlargement of the spleen, by anæmia, and often by hæmorrhages as a sequel of the latter; in the second period symptoms and signs of hepatic origin appear; in the third period the clinical picture resembles that of cirrhosis of the liver, and in the later stages ascites may supervene.

Treatment.—According to Cattoretti, symptomatic treatment may consist in the administration of iron, arsenic, or salvarsan. The latter has recently been employed with success by Perussia in a case diagnosed as splenic anæmia. Radiotherapy is of doubtful value. Operative measures, such as Talma's operation, for the relief of the portal obstruction may afford some relief. The only mode of treatment that has been fully proved to effect a cure, however, is splenectomy. In one of Banti's cases—nine years have now elapsed since the spleen was excised—there has been no recurrence of symptoms, and the patient has regained good health. Not all cases of Banti's disease, however, are suitable for splenectomy. Each case must be judged on its own merits. Among the contra-indications to operation mention may be made of ascites and other obvious signs of gross hepatic cirrhosis, and, further, of a pronounced liability to hæmorrhage. The operative cure appears to be the strongest of all arguments in support of the theory

that Banti's disease is a primary splenopathy with pathologically exalted hæmolysis.

Studies of Renal Function in Renal, Cardio-renal, and Cardiac Diseases.

Rowntree and Fitz (*Arch. of Intern. Med.*, 1913, xi. 258) contribute a valuable paper on this subject, which is one of much practical importance. They made a study of the renal function in fifty-seven patients, the tests used being phenolsulphonaphthalein (0·006 gramme injected intra-muscularly), lactose (2 grammes intravenously), salt, water, potassium iodide, and the accumulation of uncoagulable nitrogen in the blood. The functional condition of the kidney can unquestionably be determined more accurately by the use of these tests than by ordinary clinical studies alone. The writers find that for general use the phthalein test is of more value in prognosis than any other single test, and that it is valuable in cardio-renal disease in determining the relative responsibility of the heart or kidney for the clinical condition. The lactose test is also of value, but the significance of delayed lactose excretion is obscure. The salt test alone is of no value, but in conjunction with other tests it may be helpful in diagnosis and prognosis. The excretion of water in response to sodium chloride excretion may be of use in diagnosis, but the potassium iodide test is worthless.

Pepper and Austin (*Amer. Journ. Med. Sci.*, 1913, cxlv. 254) show that even the phthalein test may be misleading. In one of their cases, a boy aged nineteen, there was an unusually good phthalein elimination in spite of the existence of parenchymatous nephritis. In a second case, a man suffering from albuminuria, hæmaturia, and œdema, the phthalein elimination was approximately normal. Yet in spite of these results the writers believe the phthalein test to be of the greatest value in the determination of renal efficiency.

The Treatment of Diabetes by Means of Carbohydrates.

Richartz of Homburg (*Deutsch. med. Woch.*, 1913, xxxix. 650) describes the practical application and the theoretical aspects of von Noorden's oatmeal treatment for diabetes. For a period of three days the patient's diet consists exclusively of porridge (200 to 250 grammes of oatmeal), to which about 200 grammes of butter and 100 grammes of vegetable protein, such as tutulin, glidine, or roborat, are added, tea or coffee (without milk or sugar), and a little alcohol. In place of the vegetable protein 5 to 8 eggs may be given. If the patient is on the verge of coma the butter should be omitted and larger quantities of alcohol taken. For two days prior to, and for two days after, the oatmeal diet the patient is restricted to green vegetables, fats, and alcohol.

In one group of diabetics this mode of treatment yields most admirable results, the glucose and acetone bodies disappearing entirely

from the urine, while the ammonia excretion diminishes, and the patient feels in better health. In a second group the amount of acetone bodies lessens, although the glucose excretion remains unaffected or may even be increased. Refractory cases constitute a third group. Failure to obtain improvement on the first trial with the diet, however, does not necessarily imply that success will not be achieved on subsequent occasions. While the patient is taking the diet he may show a considerable retention of water, and moderate doses of theocine may therefore be indicated. The treatment with oatmeal appears to be particularly applicable (1) in cases in which glycosuria is readily controlled but in which the pre-existing acidosis either remains uninfluenced or becomes more pronounced by ordinary therapeutic measures; (2) in combination with alkalies and alcohol in cases of incipient diabetic coma; and (3) in diabetic children. In his paper Richartz discusses the various theories that have been advanced to explain the excellent results obtained by the oatmeal diet, and indicates that no satisfactory explanation has yet been afforded. W. T. R.

SURGERY.

UNDER THE CHARGE OF

J. W. STRUTHERS, F.R.C.S., AND D. P. D. WILKIE, F.R.C.S.

Idiopathic Dilatation of the Œsophagus.

Dilatation of the œsophagus without organic stenosis of its lower end is a condition which of late years has been shown to be of by no means infrequent occurrence. Heyrovsky (*Arch. f. klin. Chir.*, 1913, Bd. c. S. 702), in a valuable contribution to the literature on this subject, notes the fact that in the past two years ten cases have come up for treatment in one surgical clinic in Vienna (Hochenegg).

The dilatation usually begins and is always most marked in the mid-thoracic portion of the œsophagus, the upper and lower ends being always less markedly affected, and thus the œsophagus tends to assume a spindle-shaped form. Not infrequently there is an increase in the length as well as in the girth of the œsophagus, and as a result it acquires a doubled-up or loop-shaped form above the diaphragm. The musculature of the œsophagus is usually hypertrophied; in some cases, however, where the dilatation is extreme, it is thin and stretched out. The leading symptoms of this condition are dysphagia, regurgitation of the food and saliva, and a feeling of pressure in the chest after meals. In early or slight cases the patient often succeeds in forcing the food into the stomach by such manœuvres as drinking water, swallowing air, and then pressing with the glottis closed. In this way sufficient nourishment may be obtained to permit of the patient remaining for a long time in a good state of nutrition. In severe cases, however, death may occur from inanition.

An exact diagnosis of the condition can only be arrived at by œsophagoscopy or by X-ray examination after a bismuth meal. The primary cause of the dilatation is as yet not fully understood. Whilst cardio-spasm is undoubtedly present in a large proportion of cases, in a certain number no spasm of the cardia is found. To account for the latter, such causes as primary atony of the musculature and congenital dilatation of the œsophagus have been invoked. The condition of cardio-spasm and the extreme dilatation of the œsophagus which accompanies it, a dilatation much more pronounced than is ever met with above a simple stenosis of the œsophagus, are best accounted for by some disturbance in the innervation of the parts involved. Experimental observations have shown that the vagus nerve not only supplies the musculature of the œsophagus, but controls the tonus of the cardia. In certain derangements of the vagus it is possible to have, along with an atony of the musculature of the œsophagus, a hypertonicity of the cardiac sphincter. Moreover, in not a few cases of cardio-spasm met with clinically, an increased vagus tone has been shown to exist, and in some of these a definite organic cause for the reflex vagus irritation, such as ulceration in the œsophagus or stomach, small diverticula of the œsophagus, or even diseases of more distant organs, has been found. In only two instances as yet have definite pathological changes in the vagus nerves been demonstrated. Frequently, however, it is impossible to determine the primary cause, as by the time the diagnosis has been made, the condition has reached an advanced stage and has led to secondary changes. The treatment of the condition must vary according to the severity of the case. In slight cases of cardio-spasm such measures as suitable diet, regular œsophageal lavage, the administration of atropine, and possibly feeding by the stomach tube will often cure the condition. In more advanced cases dilatation of the cardiac orifice by means of an inflatable bougie passed downwards from the mouth is undoubtedly the best form of treatment, and, if skilfully carried out, will give relief in the majority of cases. In a certain number, however, and particularly in those in which the œsophagus has become lengthened and has formed a loop above the diaphragm, a bougie passed from the mouth cannot be made to enter the cardiac orifice. For such cases some operative measure is indicated.

Whatever be the operative method adopted, a preliminary gastrostomy should be performed, and time allowed for the patient to pick up strength before the more serious part of the operation is undertaken.

Of the operative measures, the favourite one has been opening the stomach and dilating the cardiac orifice from below by means of the fingers or some metal dilator. Extra-mucous cardioplasty, on the same plan as the corresponding operation at the pylorus, has also been carried out with moderate success.

Taking advantage of the fact that the œsophagus is often definitely lengthened, Heyrovsky has carried out successfully in two cases a subdiaphragmatic œsophago-gastrostomy. This operation consists in freeing the lower end of the œsophagus from its attachments to the diaphragm, pulling down the slack through the œsophageal opening—in both of Heyrovsky's cases about 6 cm. of œsophagus came down readily—and then performing a lateral anastomosis between the dilated lower end of the œsophagus and the fundus of the stomach. The left vagus nerve may be in the way, but can be divided without harm ensuing. The great advantage of this operation over all other plastic and anastomotic operations on the œsophagus is that the left pleural cavity is not opened, and the chief danger of such operations, namely empyema, is avoided.

Traumatic Rupture of the Duodenum.

This injury is liable to occur when a blunt force is applied to the upper part of the abdomen. In the majority of recorded cases the force has been the wheel of a vehicle passing over the body. This accident has been encountered much more frequently of late years, this increase being coincident with the advent of motor traffic. The rupture is usually situated in the third part of the duodenum, this portion being nipped against the vertebral column. Owing to its anatomical relationships a rupture of the duodenum at this point may, and frequently does, occur into the extra-peritoneal tissues in the first place, and the symptoms thus produced are often vague and misleading. Even when the abdomen has been opened the lesion may not be apparent, a fact brought out by Röpke (*Ibid.*, S. 925), who found that in 6 cases out of 18 operated on, the rupture was not detected at the time of operation. When there has been a coincident rupture of the liver with hæmorrhage into the peritoneal cavity the duodenal injury is very apt to be overlooked, and should therefore always be suspected and searched for.

In cases where the meso-colon and the root of the mesentery are also torn, free gas, blood, and duodenal contents will be found in the peritoneal cavity, and the diagnosis and recognition of the injury is much simpler. Strangely enough the pancreas usually escapes injury, and fat necrosis is practically never met with in these cases. As the force producing the injury is a crushing one, the wound in the duodenum is frequently ragged, bruised, and devitalised. In a few cases, where there has been a small rupture limited to a fraction of the circumference of the bowel, suture alone has sufficed, but in the majority resection is indicated. In the latter case the best operation is probably to free and freshen the proximal end, to free and pull the distal end of the duodenum out to the left, below the vessels, round the duodeno-jejunal flexure. This end is then closed by invagination,

a posterior gastro-jejunostomy performed, and the operation completed by an end-to-side implantation of the proximal duodenal stump into the jejunum as near as possible to the gastro-enterostomy. Röpke strongly recommends, in addition, the establishment of a cæcostomy, for the object of introducing fluid and nourishment, it being very desirable to give nothing by the mouth for four or five days after the operation.

Lateral Cervical Fistula.

As the result of extensive researches on the development of the neck, Wenglowski (*Ibid.*, S. 789) has come to the conclusion that cervical fistulæ opening below the level of the lower border of the hyoid bone have nothing to do with the cervical sinus. The latter is formed through the approximation of the lateral borders of the neck, the thorax, and the lower border of the *third* branchial arch, and not the second, as His and others have maintained. In the embryo the branchial apparatus lies not from above downwards, but from before backwards, and the lower border of the whole apparatus is on a level corresponding to the lower border of the hyoid bone in the adult. At the beginning of the second month the branchial apparatus as such disappears: thereafter only small remnants of stratified epithelium and sometimes cartilage remain, and these are always found above and dorsal to the hyoid bone.

The thymus is formed from the third branchial cleft in the form of a long canal extending from the lateral wall of the pharynx obliquely downwards to the sternum, where definite thymic substance begins to develop. The thymic duct usually disappears completely: in exceptional cases it persists *in toto* or in isolated portions. The lower portions are those which most frequently persist, and such thymic duct remnants develop into lateral cervical cysts or fistulæ. The anatomical position of lateral fistulæ coincides exactly with that of the thymic duct. The course of the latter in the neck is bow-shaped, the apex of the bend being situated just below the mid-point of the posterior belly of the digastric: from here the upper part is directed obliquely upwards and inwards, whilst the lower part turns towards the anterior border of the sternomastoid, which it follows downwards.

Lateral cervical fistulæ usually open at some point along the anterior border of the sternomastoid muscle, and when they extend far upwards they are usually found to curve inwards below the stylopharyngeus muscle, which is derived from the third branchial arch, both of which facts point to the thymic duct being the origin of such fistulæ.

On microscopic examination the wall of a lateral fistula is seen to be lined by stratified and occasionally by ciliated epithelium, and not infrequently nodules of lymphoid tissue are visible in its wall, a fact which speaks strongly for its thymic origin. Hammar found in a

sheep-embryo bilateral cervical fistulæ opening to the exterior. Both fistulæ communicated with the pharynx, and were lined with stratified epithelium; on the right side the fistula passed directly into the substance of the thymus.

Taking these facts together Wenglowski is convinced that practically all lateral cervical fistulæ opening in the lower half of the neck represent persistent portions of the thymic duct which have ruptured on to the surface either before or shortly after birth.

Thyreogenic Bone Tumours.

Cases of tumours of bone presenting the typical structure of thyroid tissue but occurring in patients with no demonstrable primary growth in the thyroid gland have been frequently recorded, and Regensburger, in 1911, collected from the literature the records of 59 cases of this interesting condition.

Kolb (*Beitr. z. klin. Chir.*, Bd. lxxxii. H. 2) records another case, that of a patient 73 years of age, who for three months had noticed a steadily increasing swelling on her head in the region of the left parietal bone. Sarcoma of the parietal bone was diagnosed and a radical operation was undertaken, but the patient died on the day following the operation. Histological examination of the tumour showed it to be composed of typical thyroid tissue, without any evidences of malignancy. At the sectio small nodules of similar thyroid tissue were found throughout both lungs. In the thyroid gland, a portion of which had been removed seven years before for a simple goitre, no signs of malignant change could be found. Such tumours are undoubtedly metastatic, but the primary growth in the thyroid is frequently so small as entirely to escape notice during life, and even, as in Kolb's case, to elude detection post-mortem. Thyroid metastases appear to have a great predilection for the bones of the skull and vertebral column. Of the 59 cases recorded by Regensburger the secondary growth was in the cranial bones in 25 and in the vertebræ in 20 cases. Owing to the slow rate of growth usually displayed by these bony metastases Kolb recommends removal by operation if there be but one secondary growth. In several cases where this has been carried out recurrence has not taken place until two or three years later. These facts serve to show that in the diagnosis of bony tumours the possibility of a metastatic growth from a cryptic thyroid tumour should always be borne in mind, and that only by the removal and microscopic examination of a portion of the growth can certainty in diagnosis be attained. D. P. D. W.

OBSTETRICS AND GYNECOLOGY.

UNDER THE CHARGE OF

A. H. F. BARBOUR, M.D., AND J. W. BALLANTYNE, M.D.

X-Ray Treatment of Uterine Fibroids.

It is not much more than eight years since Görl and Deutsch introduced radiotherapy into the treatment of uterine myomata, and already there is a very large literature on the subject. At first little interest was aroused, the work of Görl, of Deutsch, and also of Foveau de Courmelles passing almost unnoticed. Some three years later Fränkel drew attention again to the matter by demonstrating experimentally that the X-rays had a destructive influence on ovarian tissue: but for a time it was found to be impossible to make a practical application of this property of the rays on account of the high dosage required and the consequent risks of injuring the skin of the abdominal wall. Gradually, however, the technique was improved and the number of accidents diminished, whilst the proportion of successes increased: further, it came to be more and more clearly realised that the good effects obtained were due not to the direct influence of the rays on the tumour but to their destructive action on the ovaries.

With the establishment of this fact, viz., that the beneficial effect of X-ray treatment upon fibro-myomata was due to the influence of the rays on the ovaries, came the necessity of carefully localising the position of these glands and discovering the relation of surface landmarks to them. Professor O. Hoehne and Dr. G. Linzenmeier (*Zentralbl. f. Gynek.*, 1912, vol. xxxvi. p. 457) made some very helpful measurements with this end in view, and succeeded in mapping out both the surface relations and the level under the skin at which the ovaries lie not only in normal circumstances (anteverted non-gravid uterus) but also in cases of retroflexion of the uterus and in early pregnancies. By means of exact bimanual examinations they were able to fix upon the ovarian points in the triangle of skin included within lines joining together the two anterior superior iliac spines and each of these spines with the symphysis pubis. The ovaries were, on an average, about 9½ cm. from each other, the right being about 5 cm. from the middle line and the left 4½ cm. Speaking generally, the more sharply anteverted the uterus was, the nearer the ovaries approached towards the symphysis pubis: on an average the ovarian point was about 2 cm. below a line joining together the anterior superior iliac spines. In pregnancy the ovarian points were further separated from each other, and with the ascent of the uterus they also rose up to the line joining the iliac spinous processes. In cases of retroversion of the uterus the ovarian points on the skin were nearer together than when the womb was anteverted, and they lay higher up

close to the line joining the spines. The distance under the skin at which the ovaries lay was found to vary from $4\frac{1}{2}$ to $7\frac{1}{2}$ cm., and was a little deeper on the left than on the right side. Of course all these measurements are increasingly difficult to make in cases of myomata of the uterus, and these are the very cases in which it is most important that we should have a fairly clear idea of the position occupied by the ovaries. It follows that in all cases of fibroids of the uterus in which it is intended to apply the X-rays the attempt must be preceded by a careful gynecological examination to locate the glands. This would seem to point to the necessity of the röntgenologist being also an expert gynecologist.

There are, however, other difficulties as well as those of exact localisation. Thus it was found that in order to produce their destructive effect upon the deep-seated ovaries the X-rays must be given in doses which were dangerous to the skin of the abdominal walls. Gauss and Krönig succeeded to a large measure in overcoming this difficulty by their method of irradiation by plates. They put a protective covering over the whole abdomen except over small areas through which the ovaries could be reached. Further, by changing the angle of incidence of the rays they were able to utilise different areas of skin. Thus by employing five areas they could give a dose five times the strength which would have been safe if the same area had been used all the time. In this way doses up to 4 or 5 H. could be administered without causing radio-dermatitis. Now Drs. Chiladitis and Stavridès of Constantinople (*Ann. de gynéc. et d'obstét.*, 1913, vol. xl. pp. 152-162) have further improved the technique, and reduced the risk still more. By an ingenious device and apparatus they displace the skin of the anterior abdominal wall and are thus able to irradiate the ovaries to a still greater degree with no greater danger to the skin. Of course the more lax the skin of the abdomen is, the more effectively this plan serves. In this way the areas of entrance of the rays can easily be doubled or trebled or even quadrupled in number. Another disadvantage to the X-ray treatment, the great length of time required to get effects, is so got rid of; instead of a year or six months two or three months suffice.

The results recorded by various authors following upon X-ray destruction of the ovaries in cases of fibroid growths of the uterus have been somewhat similar. There was diminution in the amount of blood lost and sometimes a complete cessation of the hæmorrhage. Pain disappeared, the general health improved, the marked anæmia became much less, the leucorrhœa was lessened, and the size of the tumour diminished, with relief of pressure symptoms. Drs. Chiladitis and Stavridès (*loc. cit.*) specially refer to the improvement in the state of the blood in cases treated with the X-rays, and give details of two patients who were much benefited. They regard the treatment as rational and

efficacious, and they think that radiotherapy, when given by one who is an expert in such matters, is a valuable means of dealing with uterine fibroids—as good as, and in some cases better than, surgical intervention. For some grave cases which are complicated by the presence of such maladies as diabetes, chronic nephritis, heart and lung disease, radiotherapy is the treatment of choice. It must not be forgotten, too, that it is not painful, and that, in good hands, it is quite free from risk.

Dr. Charlier (*Bull. et mém. Soc. de Radiologie méd. de Paris*, ann. v., April 1913, pp. 111-115), for instance, has reported some very encouraging successes in the treatment of uterine fibroids with the X-rays. He found that some months or even years (with intervals) were needed for the treatment. The abdominal organs were little affected, in a few cases colicky pains occurred two or three hours after the sittings. Sometimes the hæmorrhage ceased abruptly, but more generally it lessened progressively. In most of Dr. Charlier's cases menstruation ceased after 3 or 4 months of the treatment, but then most of his patients were above forty years of age. This sort of artificial menopause was not followed by the same troubles as that produced by surgical procedures, possibly because the internal secretion of the ovaries was either not suppressed at all or was only gradually reduced. Further, he found that cessation of the menses was not essential to make a cure, which seemed to show that the X-rays acted in a different manner as compared with surgical castration. He was of opinion that the rays had an effect on the fibroid itself as well as on the ovaries, and that this was most marked when the fibroid contained a large amount of myomatous tissue. In all his cases he noticed diminution in the size of the tumours: in some cases the reduction was only to the extent of a tenth or a quarter, but in others the uterus returned to its original size. A very remarkable case was that of a young girl of 17 years who had fibroids of the uterus, making it about the shape and size of a fœtal head. On account of her bad state of health (tuberculosis and heart disease) surgical treatment was contra-indicated. She had the X-ray treatment on fourteen occasions between February and July 1912, with disappearance of symptoms, and in the following October there was no longer a tumour to be felt: nevertheless the menstruation remained and was normal. In the discussion which followed Dr. Charlier's paper Dr. Laquerrière doubted whether the certainty of this growth being a fibroid could be established: but Dr. Charlier replied that he had found fibroids in quite as young women. It would be interesting to discover whether pregnancy could occur in such a case.

A word of caution, however, is necessary in the case of comparatively young women submitted to the action of the X-rays. At a meeting of the Obstetrico-gynecological Society in Vienna Dr. Adler described a case of ovarian bleeding in an unmarried girl, twenty years of age, in which the X-ray treatment had a beneficial effect upon the

hæmorrhage (*Zentralbl. f. Gynäk.*, 1913, vol. xxxvii. pp. 388, 389); and Professor Schauta took occasion to utter a warning regarding the possible evil effects of radiotherapy in such cases. He said they were all agreed that the X-rays were valuable in myomata, in chronic metritis, and in climacteric hæmorrhages; under these circumstances the greatest possible effect was complete atrophy of the ovigenous apparatus, and that, under the circumstances, did not matter. When, however, they were dealing with young girls, it behoved them to be careful. Two results might follow the irradiation of the ovaries: there might be a complete destruction of the ovigenous apparatus, equivalent of course to oöphorectomy, an effect which was very seldom sought for in young women; or a lesion of the ovigenous cells might be produced and partly recovered from, when who could say with certainty that embryos developing later from such wounded ova would be normal. With regard to this second possibility, it may be recalled that Dr. A. Fiessler sounded a note of warning a year ago (*Zentralbl. f. Gynäk.*, 1912, vol. xxxvi. p. 467). He then asked the question whether the ovules in ovaries submitted to the action of the X-rays would not in some way be degenerate, and pointed out that, rather than wait for some years until this evil effect upon the descendants of these young women could be recognised, it would be better to take no risks. Certainly one can hardly think that the X-rays can have so marked an effect upon the ovaries as to check uterine bleeding without at the same time altering profoundly the ovules in the ovisacs in them.

In this connection it is interesting to note that Dr. W. P. Graves, in his article on the "Influence of the Ovary as an Organ of Internal Secretion" (*Amer. Journ. of Obstet.*, 1913, vol. lxvii. pp. 649-665), finds in the good effect of X-ray treatment in uterine fibroids some support for the theory that uterine bleeding is due to ovarian hypersecretion. He points out that the theories which explain uterine bleeding by anatomical conditions of various kinds have all been for the most part exploded, and that physiologists are turning more and more to the view that the ovarian secretion, when excessive, is a more likely cause. Thus during menstruation the blood-vessels of the uterus, and particularly of the endometrium, are always dilated and the normal menstrual blood is uncoagulable: and it is supposed that the ovaries possess as an internal secretion a substance which passes into the uterus in the blood, and, when enough has accumulated, produces menstruation by dilating the capillaries of the uterine mucous membrane and reducing the coagulability of the blood. Perhaps by its chemical influence the substance, whatever it is, causes a hyaline change in the walls of the small vessels of the endometrium, making them more permeable. When the substance has escaped through the menstrual discharge the bleeding stops, until once more, in another month, sufficient secretion has again flowed over from the ovaries and the whole process is repeated.

Abnormally great uterine bleeding would, therefore, be easily explained by the accumulation in the uterus of too much ovarian secretion. In support of his view Dr. Graves points to Schickele's experiments on the influence of uterine and ovarian extracts on the time-coagulability of the blood. Extracts were made from the ovaries, from the endometrium, and from the myometrium of organs removed at operations, and Schickele found that these extracts delayed coagulation of the blood. When they were made from organs in which abnormal bleeding had not existed the ovarian extract caused a greater delay than did that from the uterus: whereas in the cases in which there had been severe menorrhagia or other hæmorrhage the effect of the uterine extract was more powerful than that of the ovaries, and in these cases the extract from the endometrium was more powerful than that from the myometrium. Further, these extracts caused lowering of blood-pressure, which was inhibited by previous injections of pituitrin or adrenalin: this lowering of pressure was due to a dilatation of the peripheral blood-vessels. So it seemed as if excessive bleeding might well be due to the ovaries secreting this substance (which dilated capillaries and delayed the coagulation of the blood) in too great amount. A diminution in the secretion would naturally enough follow destruction of ovarian tissue by the X-rays, and so the good effect of the rays on uterine bleeding in fibroids would be accounted for. J. W. B.

LARYNGOLOGY, OTOLOGY, AND RHINOLOGY.

UNDER THE CHARGE OF

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Tinnitus and Vertigo.

The treatment of aural vertigo and tinnitus (the accent should be placed on the second syllable—tinnitus) has long been, and still remains, a reproach to otologists. This is not surprising in view of the incomplete state of our knowledge of the pathological changes which give rise to these symptoms. Diseases of the internal ear and eighth nerve are usually associated with the symptoms and signs bearing the name of Ménière—tinnitus and deafness on the one hand (auditory apparatus), and dizziness, disturbance of balancing, nausea, vomiting, and nystagmus on the other (vestibular apparatus). According to Politzer tinnitus is symptomatic of irritation of the auditory nerve ganglion or its terminal filaments in the cochlea. Fowler (*Laryngoscope*, March 1913) states that it is present in 56 per cent. of all cases of ear disease. Aural vertigo is fortunately of much less frequent occurrence, a fact that may be explained by comparative anatomy. The vestibular apparatus is much the older organ, and is therefore

better able to withstand irritation and recover from disease (Neumann). This abstract therefore is mainly concerned with tinnitus.

Politzer (*Dis. of Ear*, London, 1910) states that tinnitus is usually localised to the ear, but is sometimes referred to the head; it may be mistaken for objective noises. The following varieties are described:—hissing, buzzing, ringing, whistling, humming, roaring, noises like wind, bells, machinery, the escape of steam or gas, pistol-shots, etc. Tinnitus may vary in pitch and intensity, but is always worse in a quiet place when the patient is not occupied. It is a remarkable fact that children seldom complain of subjective noises, though they frequently suffer from attacks of Eustachian obstruction and catarrhal or suppurative otitis media. Changes of temperature or weather, alcohol, tobacco, excessive meals, stooping, fatigue, menstruation, and pregnancy have a marked influence on "noises in the ear." Neumann points out that tinnitus arising from the middle ear is usually periodic, deep in tone, and not very severe. These noises improve with inflation, but return. Noises due to labyrinthine or nerve lesions are high pitched, severe, and more or less continuous, though at first they may be slight and intermittent. Some patients in time become used to the noises, but to others they cause intense torture, and may even lead to suicide or insanity. Politzer states that cases are on record in which insanity, associated with hallucinations of hearing, has been cured by treatment of an aural affection, but adds that, as a rule, the subjective sensation of the articulate human voice has an unfavourable prognosis. In one case hallucinations of hearing referred to the right ear were explained at autopsy by the discovery of a lesion of the left cerebral hemisphere.

In an account of a recent research on tinnitus Fowler states that in an *absolutely* quiet room normal people (children as well as adults) constantly hear a faint, high-pitched sound like the buzzing of far-off myriads of insects; neurotic people felt this more than normal individuals. This "normal" tinnitus is purely subjective, and is not accentuated by closing the ears, or by using resonators—a large sea shell if held to the ear in a perfectly quiet room gives back no sound. Slight extraneous noises obscure this normal tinnitus, so that few people suspect its existence. Such drugs as quinine, salicylates, and alcohol accentuate it, whereas Valsalva's inflation dulls the sound, probably by raising the intra-labyrinthine tension. Forcible closure of the external meatus usually gives rise to tinnitus, which may be relieved by the application of an elastic neck-band.

Classification of the Causes of Tinnitus (and Vertigo).

I. *Vascular Disorders.*—Tinnitus of vascular origin usually varies with the pulse, and may sometimes be heard by an observer with the aid of the auscultation tube. Such noises may arise from the internal

carotid artery as it curves forwards in front of the cochlea or from the basilar or internal auditory artery. Vascular tinnitus may occur in cases of goitre, while Hyslop (*Lancet*, 1911, vol. ii. p. 1062) believes that in anæmia tinnitus may originate in the bulb of the internal jugular vein beneath the cochlea. Tilley (*Journ. Laryngol.*, xxv. 147) describes a case in which vascular tinnitus could be heard by others though the child did not notice the noise unless she listened for it.

II. *Disturbance of Innervation of the Muscles of the Soft Palate and Eustachian Tube* (tensor palati or dilator tubæ and levator palati or levator tubæ).—In this group we may also include affections of the nerves supplying the tensor tympani (5th) and stapedius (7th). Fowler points out that forcible contraction of the orbicularis palpebrarum causes contraction of the stapedius and tinnitus, while yawning gives rise to contraction of the tensor tympani, and may also be accompanied by tinnitus. In many of the cases of tinnitus associated with palatal contractions the "noises" can be heard by an observer with or without the aid of an auscultation tube. On examination rhythmic contractions of the palatal muscles may be seen. Tilley records a case in which the rate of contraction was 120 per minute. The treatment in these cases is that for neurasthenia, though Lermoyez claims to have cured one case by withdrawing salt from the diet.

III. *Affections of the External Auditory Meatus, e.g.*, accumulations of wax or epithelium or acute inflammatory conditions.—Such cases of tinnitus and vertigo are easily cured but are unfortunately rare.

IV. *Inflammatory Affections of the Lining Membrane of the Middle Ear Cleft* — Eustachian catarrh, acute catarrhal and suppurative otitis media, and chronic adhesive processes in the middle ear, *i.e.*, the results of long-continued catarrhal and suppurative disease.—In acute cases, especially catarrhal ones, tinnitus is extremely common, but if the case be properly treated the prognosis is favourable. Renshaw (*Ibid.*, 1909) regards chronic adhesive processes as the most common cause of tinnitus, but few otologists will agree with him.

V. *Disease of the Labyrinth Capsule*—Otosclerosis or otitis vasculosa. —This is a very common cause of intractable noises in the ear, and formed the subject of a recent abstract (*Edin. Med. Journ.*, January 1913).

VI. *Diseases and Injuries of the Labyrinth*—Serous and purulent labyrinthitis, leukæmic hæmorrhages, gummatous infiltration, concussion as produced by a sudden explosion or loud noise, fractures of the cranial base involving the labyrinth, etc.—Ruttin points out that as the lymph spaces in the labyrinth are continuous, any affection must involve both the auditory and vestibular functions. The patient would at the onset be dizzy as well as deaf—as a matter of fact the vestibular symptoms greatly overshadow the auditory ones. Later on the deafness remains but the dizziness disappears, although the vestibular apparatus on that side may be destroyed.

VII. *Affections of the Auditory and Vestibular Nerves*, especially of their ganglion cells.—The cochlear ganglion is situated in the modiolus, and from it fibres pass outwards to Corti's organ and inwards to the internal meatus. The vestibular ganglion, on the other hand, lies in the internal meatus, and from it fibres pass to the neuro-epithelium of the utricle and saccule as well as to the cristæ of the three canals. It is probable that lesions of these ganglia and nerves are the commonest cause of tinnitus and vertigo, but our knowledge of these conditions is still very slight. It will be obvious, however, that, as each ganglion may be separately affected, we may have tinnitus without giddiness and giddiness without tinnitus. Among the pathological or toxic conditions which may affect the auditory nerve we may mention tabes, rheumatism, syphilis, intestinal toxæmia, and arteriosclerosis. Arsenic, quinine, salicylates, tobacco, and alcohol may also cause neuritis. In tabes the tinnitus comes on some years before paralysis, and is of high pitch. As neuritic tinnitus, like other varieties, is worse in a quiet place, the Vienna otologists are in the habit of sending their cases to Wildbad Gastein, where there is a large waterfall! Witmaack (*Deutsch. med. Woch.*, 26th September 1912) suggests that these patients should have a loud-ticking clock in their rooms.

VIII. *Lesions of the Basal and Cortical Centres of the Eighth Nerve* do not come within the scope of this abstract. Lake (*Journ. Laryngol.*, 1905, p. 257) points out that if the tinnitus be of central origin, operation on the cochlea, vestibule, and canals will do no good.

IX. *Neurasthenia* and allied conditions.—Cases of this nature usually show no abnormality of the drumhead and no diminution of hearing power. According to Fowler the application of a neck-band relieves tinnitus of neurasthenic origin; it acts on the principle of Bier's congestion.

X. *Increased Intra-cranial and Intra-labyrinthine Pressure.*—It is claimed that in some cases of chronic adhesive process the footplate of the stapes may be pressed into the oval window and so raise the intra-labyrinthine pressure. Woods does not believe that this can last more than a short time, as the comparatively free communication between the perilymph and the subarachnoid space through the cochlear aqueduct must soon reduce excessive pressure in the labyrinth. Hyslop points out that increased pressure of the cerebro-spinal fluid is not usually associated with tinnitus, but in certain conditions (arteriosclerosis and nephritis) excess of pressure may be accompanied by noises in the ear.

Treatment.

1. *Medicinal and General.*—Barr (*Ibid.*, 1909, p. 491) points out that digestive disturbances are often overlooked, and that a mercurial pill, followed by a saline purge, is of great benefit; Politzer mentions the use of mineral waters in such cases. In neurasthenia, rest, change of

air, and tonics, such as strychnine, arsenic, and phosphates, are indicated. Chronic nephritis may be at the root of many cases of tinnitus. A bracing dry climate is often of advantage, whereas sea air is bad. Politzer mentions the following drugs:—Sodium bromide, atropine, pilocarpine, quinine, potassium iodide, and mercury. Sacher recommends mercuric chloride (gr. $\frac{1}{60}$, in pill form) twice daily for one month. Wittmack mentions valerian and thyroid extract, while Gray (*Dis. of Ear*, 1910) has had good results from nitrites. Hunter Tod recommends digitalis, especially if the noise has a pulsating character. Neumann states that pantopon may be tried, but remarks that every new kind of treatment helps for a time, though not for long. Of late tuning-forks have been employed in the treatment of tinnitus: if the noises are low pitched a high tuning-fork is used, and *vice versâ*.

2. *Local Treatment, including Minor Surgical Operations.*—In cases of recent Eustachian or tubo-tympanic catarrh local treatment is of great importance. The condition of the nose and naso-pharynx should be attended to; such remedies as the alkaline nasal wash and inhalations of mentholised water vapour may be employed. Operations on the nasal septum or turbinals or on adenoid growths are sometimes called for: inflation of the middle ear cleft by Politzer's method or the Eustachian catheter is usually required to complete the cure. When catarrhal exudation has occurred into the tympanic cavity, it is of the utmost importance that paracentesis should be performed and the exudate removed by suction, applied through the external meatus or by inflation through the Eustachian catheter. Neglect of these procedures may be followed by a chronic adhesive process in the tympanic cavity. It is a remarkable fact that the middle ear cleft makes a better natural recovery from an attack of acute purulent otitis media than from one of mucous catarrh. In more chronic cases the Eustachian bougie is often required, followed by the usual air douche, but the value of electrolysis of the Eustachian tube and of inflations of hot air through the Eustachian catheter (Gay-French, Wyllie, *Ibid.*, 1909) has probably been greatly exaggerated. Medicated vapours (iodine) and solutions of potassium iodide or pilocarpine have been injected through the Eustachian catheter, but without much success. Recently the use of the pharyngoscope has been advocated for the treatment of affections of the Eustachian tube, but the value of this instrument has not as yet been proved. Lermoyez (*La presse otolaryngologique Belge*, 1906) does not think highly of these methods of treatment, and believes that the good effects are due to suggestion, as most of the patients believe they are benefited for a time by any method of treatment. A few years ago thiosinamin and fibrolysin were used as an aid in the local treatment of tinnitus. As a rule the injection of these drugs was combined with the use of the Eustachian catheter and

pneumo-massage of the tympanic membrane and ossicles; the results reported by different observers vary greatly, but as usual the later records were much less favourable than the earlier ones. Counter-irritation over the mastoid, below the ear, or in front of the tragus is often employed in the treatment of tinnitus, but Politzer and others admit that in cases of long standing the use of blisters does little good. Galvanism has also been employed. The positive electrode is surrounded with cotton-wool soaked in saline solution and introduced into the external meatus, the cathode is held in the hand or applied to the back of the neck. The current is begun at zero and increased to 1 to 3 M.A. Before removing the electrode the current must again be reduced to nil. If the patient complains of pain, bad taste, or dizziness, or if facial spasm or vomiting occur, the current must at once be diminished.

3. *Operative Treatment.*—(a) Operations on the nose and naso-pharynx and paracentesis of the drumhead have already been referred to. In chronic adhesive cases division of the tendon of the tensor tympani or of the posterior fold of the membrane has sometimes given good results. (b) *Lumbar puncture.*—In 1904 Babinski reported that he had relieved 33 per cent. of cases of tinnitus by lumbar puncture Recently Barany has described a symptom-complex in which the patient suffers from a sudden attack of headache over the posterior fossa on the same side, accompanied by dizziness and deafness in one ear; the deafness is of the inner ear type. Barany finds that most of these patients have previously suffered from attacks of middle ear catarrh or suppuration, and regards his symptom-complex as a localised meningitis in the cisterna pontis. He has seen about thirty cases, and treats them by the withdrawal of 10 c.c. of cerebro-spinal fluid by lumbar puncture with good results. He, however, admits that occasionally the patients get well spontaneously after experiencing a feeling as if something burst in their heads. (c) *Ligature of arteries.*—Barr mentions one case in which ligature of the external carotid did good, but the anastomosis is so free that the value of this operation is doubtful. Politzer states that the results of ligature of vessels are not good. (d) *Operation on the labyrinth.*—Lake reported his first success in 1904, and a few years later recorded three good results out of four cases. After the performance of the radical mastoid operation the cochlea is attacked through the promontory if the patient suffers only from tinnitus. Lake holds that the modiolus of the cochlea should be removed along with its spiral ganglion, the cells of which are probably the cause of the tinnitus. This operation is followed by a profuse flow of cerebro-spinal fluid. If the technique be good there is little danger to the facial nerve. Lake gives his results (*Lancet*, 10th June 1911). It is interesting to note that in one unsuccessful case of tinnitus the patient threatened suicide before the operation, and carried out her threat after the operation had proved a failure. In cases of dizziness

associated with a lesion of the vestibular apparatus the operation of vestibulotomy is performed: the vestibule is opened with the gouge behind and also in front of the facial nerve. (e) *Section of the eighth nerve at the internal auditory meatus.*—Dench (*Interstate Med. Journ.*, January 1912) and others have reported cases in which this difficult operation has resulted in at least some amelioration of the patient's condition. It is very difficult to see why this operation should be followed by any better result than the much simpler and safer operations on the labyrinth just described. In 1909 Lake reported the results obtained by other operators from division of the auditory nerve — eight operations: three fatal, two failures, one success, one not fully reported. J. S. F.

PATHOLOGY.

UNDER THE CHARGE OF

THEODORE SHENNAN, M.D., AND JAS. MILLER, M.D.

Persistence of Type in the Tubercle Bacillus.

Recent work upon the strains of tubercle bacilli separated from lesions in human tuberculosis shows wide divergence of results. Thus Burnet (*Annales de l'Institut. Pasteur*, 1912, tom. xxvi. p. 868), working in Paris, investigated 75 strains of tubercle bacilli. Of these, 26 were from bone and joint lesions, 23 from cases of gland tuberculosis, the remainder from skin, lung, kidney, meninges. In not a single instance was the bacillus which was separated of the bovine type. On the other hand Fraser (*Journ. of Exper. Med.*, 1912, vol. xvi. p. 432), working in Edinburgh, and publishing the results of an investigation into 70 cases of bone and joint tuberculosis, finds in 41 cases the bovine type of bacillus present. With the exception of three strains, which were from adults, the material was obtained from children of from less than one year up to 12 years of age. Steffenhagen (*Tuberkulose Arbeiten a. d. Kais. Gesundheitsamte*, 1912, H. 11, p. 25), working in Berlin, finds out of 17 cases of surgical tuberculosis only one strain of the bovine type from a case of cervical gland tuberculosis. In four other cases where the material was obtained post mortem two of the strains separated proved to be bovine: both of these were cases of primary bowel tuberculosis in children. The same author (*Ibid.*, p. 52) found out of 40 cases of tuberculous infection in infants only five strains of the bovine type. Lindemann (*Ibid.*, H. 12, p. 11), investigating sputum from 41 cases of pulmonary tuberculosis, finds 40 of these due to the human bacillus and only one due to a mixture of human and bovine. Examining a series of 171 children post mortem, Ungermann (*Ibid.*, H. 12, p. 109) finds tuberculosis in 38: in only two of them was the type of bacillus bovine. The same author (*Ibid.*, p. 213), following up a series of cases of udder tuberculosis in cows as regards the distribu-

tion of the milk, found that the consumers, who numbered 687, of whom 280 at least were children, as a rule enjoyed good health. In only two cases was tuberculous infection due to a bovine bacillus proved, although in fourteen other cases there was a suspicion of such infection.

Before analysing these results, and drawing conclusions therefrom, certain points require consideration.

In the first place, How far is it possible to make a distinction between bovine and human bacilli? Malm (*Centralbl. f. Bakt.*, Bd. lxv. p. 42) does not admit the distinction. He regards all strains that are derived from human material as human, and all those coming from bovine sources as bovine. He explains the variations found as regards cultural and biological characters as merely representing grades in virulence. It must be stated that Malm worked with laboratory strains and not with material from lesions. On the whole, however, the consensus of opinion is that there is a fairly well-marked line between the bovine and the human bacillus. A. Weber, Director of the Bacteriological Department of the Kaiserliches Gesundheitsamt (*Centralbl. f. Bakt.*, 1913, Bd. lxiv. p. 243), discusses the question fully, and concludes that by cultural and inoculation tests it is possible to distinguish between the two types of bacillus tuberculosis. He gathers together 138 cases of human tuberculosis in which the organism was definitely proved to be of the bovine type. Of these 117 were cases of tuberculosis in children, 21 were adults. Of the 117 cases in children the source of origin is fully given in 105, viz. abdomen, 60; glands in the neck, 25; tonsils, 4; bones and joints, 3; lupus, 6; generalised tuberculosis, 7. Of the 138 cases 56 had already proved fatal. One is pleased to note that even such a professed follower of Koch's teaching on this matter concludes from the above that bovine tuberculosis "forms a danger to the public health which must not be underestimated and which certainly demands precautions and preventive regulations." At the same time Weber reminds us that when compared with the whole mass of tuberculosis the proportion of cases proved to be of bovine origin is small.

The second point upon which one would like information is this: Does the presence of the bovine bacillus indicate infection of bovine origin, and does the presence of the human type indicate infection of human origin? In other words does the organism retain its type in varying environment, or, on the other hand, does it alter from the bovine into the human or from the human into the bovine? Some time ago Eber (*Münch. med. Woch.*, 1910, p. 115) reported that he had transformed the human type of bacillus into the bovine. The material used by him was obtained post mortem from cases of pulmonary tuberculosis, and the organism which was separated showed all the characters of the human bacillus. Infected material from guinea-pigs was inocu-

lated into the peritoneal cavity of calves, and in 3 cases out of seven a transformation of type was obtained.

These experiments have been repeated recently by Neufeld, Dold, and Lindemann (*Centralbl. f. Bakt.*, Bd. lxv. p. 467), who have entirely failed to confirm Eber's results. They consider that Eber in his positive experiments must have been dealing with mixed strains of the human and bovine bacilli. Working at this question from another point of view, Weber and Steffenhagen (*Tuberkulose Arbeiten*, 1912, H. 11, p. 1) give the results of an examination of material obtained from time to time from five children affected with tuberculosis due to the bovine type of bacillus. Some of these children have been under observation for over 10 years, and during that time there has been no evidence of alteration of type in the strains of bacilli obtained at different times. Some slight variation in virulence was observed in the organisms but no evidence of alteration of type. Again, Weber and Dieterlen made repeated observations on a case of infection of the lung with the bovine type of bacillus without observing any alteration of type. An interesting case of bovine infection in a slaughter-house inspector is reported from Rome by Coseo, Rosa, and de Benedictis (*Centralbl. f. Bakt.*, 1912, Bd. lxvi. p. 161). Repeated examination of material from the lesion always resulted in demonstrating the bovine type of bacillus.

We may conclude therefore (1) that it is possible to draw a fairly hard-and-fast line between the bovine and human types of the tubercle bacillus: (2) that the presence of the bovine bacillus indicates a bovine source of infection.

These two points being settled so far as is possible at present, we may return to the question of the explanation of the marked divergence in results among the observers in Edinburgh on the one hand and Paris and Berlin on the other. Is it due to any variation in the source of the material? Certainly the Edinburgh results were obtained from a more restricted source, but work is being done at present which goes to show that this high proportion of bovine infection is not confined to bone tuberculosis. One is driven to the conclusion that there is some local factor operative in producing these results. This local factor may be one of two things—(1) it may be increased opportunity of bovine infection, or (2) it may be lowered resistance on the part of the Edinburgh child. The data are not to hand at present for the decision of this matter. J. M.

NEW BOOKS.

Malingering and Feigned Sickness. By Sir JOHN COLLIE, M.D., J.P. Assisted by ARTHUR H. SPICER, M.B., B.S.(Lond.), D.P.H. London: Edward Arnold. 1913. Price 10s. 6d.

THIS work supplies a want, for all authorities are agreed that since the introduction of the Workmen's Compensation Act and the National Insurance Act malingering and valetudinarianism have become much more frequent. The work is based on a large personal experience. The author is medical officer to two large public bodies, and to some fifteen or twenty insurance companies, which send sick and injured workmen to him for his opinion as to their fitness for work or otherwise. He states that for some years past he has seen approximately 2000 such cases a year, and that 25 per cent. (1 in every 4) were reported to be fit for work. The majority of these were not typical malingerers, but they would nevertheless, from various causes, have unduly prolonged their illnesses.

In the author's opinion the best means of preventing malingering may be briefly stated as follows:—"(1) A system of organised lay-inspection. (2) Repeated, periodical, independent medical supervision. (3) Complete independence of the medical attendant. (4) Some system of registration which shall make apparent what is the full amount of sick-pay and other benefit, if any, that the patient is in receipt of."

In illustration of the value of periodic medical examination the author states: "In the case of a large group of employees in a public service, all of whom had been medically examined before entering the service, and were entitled to medical attendance by district medical officers paid by capitation grant, it was found that, prior to the institution of the independent medical inspection after twenty-eight days, the total number of days men were on the sick-list amounted in one year to 14,400; whereas, subsequent to the institution of the new rule, this number was reduced to 9600—a reduction, in a well-organised and disciplined small force, of no less than 4800 days in one year, the percentage of reduction being $33\frac{1}{3}$. During the corresponding periods the total number of men sick for *more* than twenty-eight days was reduced by the somewhat surprising figure of 50 per cent."

In order to detect and prevent malingering in insured persons the author states: "It is therefore advisable that medical men should be appointed to whom doubtful cases could be referred. Such men should have a special training in dealing with doubtful cases of malingering; they should have no local associations, and each one should have a circuit which he would traverse at stated periods. If such appointments were made, a local medical man who is in doubt as to whether

a certain individual is abusing the National Insurance funds would have the opportunity of advising a consultation with the medical referee of the district.

"The odium of sending back to work a man reluctant to resume would thus be removed from the shoulders of the doctor who was actually attending him, who would naturally be averse to performing such an unpleasant duty. The mere fact that such inspectors were appointed would tend to counteract the laxity and favouritism which might otherwise be shown.

"In Germany it has been found that it pays the administrators or managers of pension funds (which are equivalent to our approved societies) to appoint special doctors to examine persons in receipt of sickness benefit. Experience shows that they have saved the funds more than the amount of their salaries."

The greater part of the work is devoted to the medical examination of patients who allege disability as the result of accident or disease. As the result of his large practical experience the author makes numerous shrewd remarks and gives many valuable hints, which cannot fail to be of great use in dealing with cases of suspected malingering. Scattered throughout the book there are numerous illustrative cases. The work should be carefully studied by the general practitioner.

General Paresis. By Professor Emil Kraepelin. Translated by J. W. Moore, M.D. No. 14 of the Nervous and Mental Disease Monograph Series. Pp. 200. 1913. Price $3.

This work is a translation of a chapter from the last edition of Kraepelin's *Text-Book of Psychiatry*. In it we have a very full and lucid discussion of general paralysis—as regards its symptomatology, etiology, post-mortem findings, etc. The author is of opinion that the disease is influenced to a large extent by the use of alcohol. He suggests that "perhaps the general deterioration in the health of the race through alcoholic intemperance, still more than the personal alcoholic habit, may increase the susceptibility to paresis." Many facts regarding various nations are given in support of this conception. The theory of Ford Robertson and M'Rae that the disease is due to a diphtheroid bacillus is mentioned, only to be looked on as being incompatible with all established experience and theory regarding general paralysis. It is remarkable that in a book so recently published no mention is made of Noguchi's discovery of the spirochæte in the brain of those dying of dementia paralytica. The chapters dealing with the diagnosis and post-mortem findings are especially good. The book can be recommended to physicians as one which is likely to give them a clear and wide conception of general paralysis.

The Difficulties and Emergencies of Obstetric Practice. By Comyns Berkeley, M.D., etc., and Victor Bonney, M.D., etc. Pp. 787. With 287 Illustrations. London: J. & A. Churchill. 1913. Price 24s.

The aim of this work is an excellent one, viz. to give the practitioner an account of the difficulties and emergencies of obstetric practice. Some of the rarer complications can thus be given, and this will supplement the accounts of our ordinary systematic text-books, where rare conditions are often omitted. On the whole the subjects treated of are well done, but in too general a manner, and it would have been better for the authors to have taken up only difficult forceps cases, such, for instance, as deep transverse cases, non-rotated, and cases where forceps had to be applied in posterior positions where no rotation had occurred. These complications, however, are dismissed in five lines, although special methods of applying forceps in such malpositions have been described and practised.

The weak point of the book is that any explanation of the pathology or mechanism underlying pathological states is occasionally behind date. Some instances of this may be given.

In rupture of the uterus all that is said is as follows:—"It was pointed out by T. Hicks that spontaneous rupture of the uterus is most often met with in multigravidæ, in whom more or less degeneration of the uterine wall, due to repeated child-bearing, has occurred. The appreciation of this fact is very important, because current teaching has always laid most stress on obstruction as the first factor in the causation of rupture" (p. 422). This is, of course, true, and if the authors believe this, why not discuss the degeneration and the special tissues affected—the elastic tissue for instance? No notice is taken of the great point Bandl established, namely, the higher position of the retraction ring above the pubes, the thinning of the lower uterine segment, and the alterations in the position of the uterine attachment of the round ligaments. It is this that enables the practitioner to recognise threatened rupture, and the omission of the points in diagnosis is serious.

The incompleteness of the description of the cause of the separation of the placenta in placenta prævia is another instance, and in writing of paraplegia the authors have not availed themselves of Routh's and A. Bruce's work. These points and several others should be more thoroughly and accurately considered and treated of in a future edition.

The illustrations are boldly and well done, not too diagrammatic and not too detailed. The statement, however, in the preface that "all of these (the illustrations) are original" is too sweeping. Fig. 22, inversion of the uterus, is based on an illustration in Bumm's *Grundriss* (Fig. 498, 3rd edition) with the twist of the inverted organs reversed,

and Fig. 55 appears to owe something to Bumm's Fig. 480. The almost total absence of any literature or of any allusion to other observers is unfortunate, as it does not allow of a practitioner following up the literature of any case, and indeed gives him the idea that all that can be said has been said in the special section.

The publisher and artist have done their work well, and on the whole the book can be recommended.

Glycosuria and Allied Conditions. By P. J. Cammidge. Pp. 467. London: Edward Arnold. 1913. Price 16s. net.

In this book the author has successfully summarised in an accessible form one of the most complex problems of medicine. As he himself says, it is a subject of interest to the physiologist, the pathologist, the chemist, and the physician, and as a result the literature on the subject has assumed enormous proportions. The task of keeping the essentials of the subject within its present limits can have been no light one. The book may be cordially recommended from two points of view—as an extremely succinct résumé of the literature of the subject, and as a valuable guide to the diagnosis and treatment of the condition based upon the conclusions at which the author has arrived.

The book is one which will appeal to the practitioner as well as to the specialist, and contains many useful hints in diagnosis and treatment of an essentially practical nature. The major half of the book is devoted to the chemistry and physiology of the condition. It is interesting to note that as a result of his experience the author prefers to rely on Benedict's test as a preliminary test in the routine examination for sugar. The author gives a modification of his original pancreatic reaction, and strongly emphasises the importance of early recognition of pancreatic diseases, and particularly those of an inflammatory type. Even as it stands, the exhaustive nature of the monograph makes it impossible to do justice to it within the limits of a short review.

Eye-Strain in Everyday Practice. By Sydney Stephenson, C.M., F.R.C.S. Pp. 139. London: The Ophthalmoscope Press. 1913. Price 3s. 6d. net.

This book contains reprints of articles on eye-strain and cognate subjects which have appeared at various times during the last decade in the columns of the medical press, together with the Middlemore Lecture delivered at Birmingham in 1910. The author is well known as a prominent London ophthalmologist and a voluminous writer in all departments of ophthalmic science and practice. It consists of seven chapters:—Eye-strain and its detection in practice, ocular headaches, some unusual forms of migraine in children, habit-spasm and eye-strain, a common appearance of the optic disc liable to be mistaken for optic papillitis, cases of eye-strain simulating grave organic

disease of the central nervous system, and the aftermath of eye-strain. Most of the opinions stated coincide with our own—for example, the necessity for the use of atropine to produce complete cycloplegia in correcting minute defects in refraction, and the importance of low forms of refractive errors in the causation of headache. We have had the pleasure of reading most of the papers before, and are glad to have them in the convenient form here presented. The author is to be congratulated on this valuable addition to ophthalmic literature, and we heartily recommend its perusal to all concerned.

A Treatise on Pellagra. By Edward Jenner Wood, S.B., M.D. Pp. 377. New York and London: D. Appleton & Co 1912. Price 16s. net.

This volume gives a very full description of the disease. Considerable prominence is given to the scientific work which has been done with regard to the etiology of the disease, and the different theories are very fully discussed from an unbiassed standpoint. Although it is primarily intended for the general practitioner of America, the practitioner in this country would do well to make himself familiar with this disease, which has recently been shown to occur in this country. The illustrations of the skin manifestations give as good a representation of the appearances as it is possible to get from ordinary photographs.

Electro-Therapeutics for Practitioners. By Francis Howard Humphris, M.D.(Brux.), F.R.C.P.(Edin.). Pp. 243. Illustrated. London: Edward Arnold. 1913. Price 8s. 6d. net.

This book is not a compendium on electro-therapeutics, but rather a series of essays on those forms of electrical and of light treatment which the author has found most useful in practice. It will therefore be of more service to the practitioner than to the student. The author is a believer in static electricity and in the high-power incandescent light; he recommends the use of the static-wave current for dyspepsia, for enlarged spleen, for enlarged prostate, and for pain, even that due to locomotor ataxia. There is a chapter on the treatment of obesity by Bergonie's method. The author states on page 17 that the sparks passing from the negative electrode are brighter and whiter than those from the positive; the latter are said to be more violet. Is not the reverse the case? On page 9 Guericke's name is wrongly spelt. There is an interesting chapter on "Lessons from Failures," and a good index. The book is written in an easy style and is well printed, and it can be commended to those who are interested in electro-therapeutics.

NEW EDITIONS.

Geburtshilfliches Vademecum für Studierende und Ärzte. Von Professor D. A. Dührssen, Berlin. Mit 43 Abbildungen. Zehnte, verbesserte und vermehrte Auflage. Berlin. 1913. Verlag von S. Karger. Price Mk.5.60.

The fact that Professor Dührssen's *Vademecum* has run through ten editions in thirteen years in Germany is sufficient proof of its value to the German student. Special care has been taken with the sections on antisepsis and the management of labour, and those subjects on which the author is an authority, viz. the dilatation of the rigid portio during labour, vaginal Cæsarean section, etc., are given in somewhat greater detail. A few points of treatment may be noted. In the third stage of labour he recommends the hand-grip in half an hour to an hour after the second stage is finished, and points out the dangers of too early use of Crede's method. He opposes early rising in the puerperium, on the ground that it predisposes to uterine and vaginal prolapse. As to the ligature of the pelvic veins in puerperal pyæmia, he advocates complete extirpation of the broad ligament in unilateral septic thrombosis, vaginal drainage, and roofing in of the cavity with bladder peritoneum.

Extra-peritoneal Cæsarean section is shortly described, and he jestingly suggests that it might be described as "Buddhageburt," that saint, according to the Indian legend, having been born through his mother's side without agony or pain.

The *Vademecum* is excellent, and the senior student in this country might read it with profit to revive his German and gain some idea of foreign views.

Medical Electricity. By H. Lewis Jones, M.A., M.D., etc. Sixth Edition. Pp. xv. + 551. London: H. K. Lewis. 1913. Price 12s. 6d. net.

To the ever-increasing number of those interested in the subject of electro-therapeutics in one or other of its numerous branches a new and thoroughly revised edition of this well-known and useful work will be welcome. As about seven years have elapsed since the publication of the fifth edition, it will be readily understood that much fresh material has had to be introduced, and whilst adhering closely to the general plan of former editions, the author has taken care to bring the present volume up to date. The important subject of ionic medication is carefully and fully dealt with, and mention is also made of the use of condenser discharges in the testing of muscle, a method which we agree with Dr. Lewis Jones in thinking will supersede the present one. The author has done well to do little more than touch on the question of the use of X-rays in diagnosis and in the treatment of

skin diseases, as this is, we believe, too wide a subject to be dealt with in a volume which is, after all, no more than a handbook, more especially as the space thus gained has been more usefully devoted to the consideration of the use of electricity in the treatment of general and systemic diseases, the chapters on which may be read with advantage by all electro-therapeutists. The volume is well and profusely illustrated, and has a carefully-prepared index. It is in every way worthy both of the author and the publishers, and we are sure that it will be as useful as its predecessors have proved to be.

Retinoscopy. By JAMES THORINGTON, A.M., M.D. Sixth Edition, Revised and Enlarged. Pp. 71. London: Rebman, Ltd. 1912. Price 4s. 6d.

THIS volume is the sixth edition of Professor Thorington's brochure on *Retinoscopy or the Shadow Test.* It has been carefully revised and brought up to date by alterations in the text and by the addition of new illustrations. The subject-matter is presented in as clear and concise a manner as possible: in fact we know of no book in which the optics and principles of retinoscopy are better or more clearly described. The author deserves the utmost praise for placing such a reliable and useful treatise on an important and difficult subject at the disposal of students and post-graduates.

Lessons in Elementary Hygiene and Sanitation, with Special Reference to the Tropics. By W. T. PROUT, C.M.G., M.B., C.M.(Edin.). Third Edition. Pp. 184. London: J. & A. Churchill. 1913. Price 2s. 6d. net.

A COURSE of six lectures given by the author has here been extended and illustrated with the object of forming an elementary text-book for the use of schools in the tropics. The lecture form, with its attendant advantages and drawbacks, has been retained throughout. The author's aim has been to give the facts in as simple and easy a manner as possible. He has professedly written for those who are quite ignorant of the subjects of which he treats. The writer has been entirely successful in achieving the objects sought. The book is well suited for its purpose. Any capable teacher in a school in the tropics would find it a good foundation on which to build. The facts are clearly put, and are reliable and up to date. The teaching deduced is sound. The type and paper are good, and the illustrative diagrams apt. Apart from the pupils in school, lay people resident in the tropics may profit by many useful hints throughout the book. In a future issue a chapter on the stings and bites of poisonous insects and reptiles should certainly be included. The omission of all reference to this important matter is a striking lack.

NOTES ON BOOKS.

Dr. Archibald M'Kendrick has written a useful little work on *Malingering and its Detection* (E. & S. Livingstone, 1912, price 1s. 6d.). It deals specially with those forms of malingering which are exhibited by persons having claims under the Workmen's Compensation and other Acts. The commoner complaints of such persons are carefully described and correlated with their pathology, and various methods of discriminating between real and fictitious symptoms are suggested. There seems to be just a danger that the description of these tests, together with the moderate cost of the book, may give the work a vogue as a guide to how to avoid detection in malingering.

In *How to Cut the Drug Bill* (London, John Bale, Sons & Danielsson, Ltd.) Dr. Hart preaches economical dispensing. For the modest sum of half a crown practitioners who compound their own prescriptions may learn how to obtain "the floating sixpences" under the Insurance Act. We do not know whether it is a real step in advancing scientific medicine to educate a generation of practitioners to that pitch that when an infant coughs, the mystic symbol M.T.I. (mist tus. infant) springs to the mind; but there it is, and unquestionably the replacement of formal prescriptions by such contractions as M.A.P., M.S.S., or M.K.K. is a labour-saving device. The prescriptions given are nearly all standard ones, of proved value, and although we confess to a prejudice against anything savouring of "penny-in-the-slot" dispensing, it cannot be denied that Dr. Hart makes a good case for stock mixtures. The chapters on proprietary remedies are more enthusiastic than discriminating in their praise.

This, the second, edition of Dr. W. E. Alderson's *Dental Anæsthetics* (John Wright & Sons, price 3s.) is a résumé of the author's lectures at the Newcastle-on-Tyne Dental Hospital, and gives an account of the methods there in use. It is strictly orthodox: Edinburgh methods, for instance, receive no notice. Being very condensed and devoid of any illustrations, it is only of value to those who are undergoing practical training. They will, however, find in it a useful supplement to their hospital work. Mr. Bolam, L.D.S., contributes a chapter upon "analgesia," short, but very good.

Dr. E. P. Minett's little book on *Diagnosis of Bacteria and Blood Parasites* (Baillière, Tindall & Cox, 1913, price 2s. 6d.) contains a series of formulæ and working directions. There is little to connect them, and no reference to guiding principles. We should have thought that anyone capable of using such a book would have been familiar with the various procedures, but the brochure may be of occasional service in the laboratory as an aid to memory. A second edition indicates that it has been appreciated.

TRANSACTIONS, ANNUALS, ETC.

Transactions of the American Surgical Association, vol. xxx. (Philadelphia, Wm. J. Dornan, 1912). In these *Transactions* we find year by year the cream of the records of the work done by American surgeons collected into a convenient volume. Many of the papers have already been noticed and abstracted in our columns as they appeared in the current journals. It is only necessary here to say that the present issue is as indispensable in a reference library as its predecessors.

We have received vol. xvii. (Suaheli-Testut) (Second Series) of the *Index Catalogue of the Library of the Surgeon-General's Office, United States Army*. This work of reference is so well known and so highly valued by all who have occasion to search through medical literature that we need not do more than record the appearance of another volume and our grateful appreciation of its worth.

The thirty-first issue of the *Medical Annual* (Bristol, John Wright & Sons, 8s 6d. net) has all the admirable features of its predecessors. It is a most excellent and comprehensive digest of the advances of the year. The *Medical Annual* is so well known that it needs little in the way of commendation, but we may call attention to one cause at least of its high quality. The contributors are all experts and men of standing in their specialties, and both the publishers and the readers are to be congratulated on being able to obtain really critical summaries from such competent pens.

We have received the new issue of *The Medical Who's Who* (London and Counties Press Association, Ltd., 1913, price 10s. 6d.). The work has been considerably enlarged and contains more than twice the number of particulars published in the 1912 issue It is perhaps well to call attention to the fact that this is in no sense a selected list of practitioners. In so far as the list of registered practitioners is incomplete, it is due to certain members of the profession having failed to return the forms sent out to them.

BOOKS RECEIVED.

Barbour, A. H. F., and B. P. Watson. Gynecological Diagnosis and Pathology	(*Green & Sons*)	7s. 6d.
Bernstein, J. M. Applied Pathology in Diagnosis and Treatment	(*Fowcle, Hodder & Stoughton*)	10s. 6d.
Besson, A. Practical Bacteriology, Microbiology, and Serum Therapy	(*Longmans, Green & Co.*)	36s.
Bland-Sutton, J. Fibroids of the Uterus	(*Science Reviews, Ltd.*)	4s. 6d
Jones, H. Lewis. Ionic Medication	(*H. K. Lewis*)	5s.
Joseph Bell: An Appreciation by an Old Friend	(*Oliphant, Anderson & Ferrier*)	3s. 6d.
Journal of Hygiene (Plague Settlement II.), January 1913	(*Cambridge University Press*)	7s.
Lewis' Pocket Case Book for the Use of Students and Practitioners	(*H. K. Lewis*)	1s. 6d.
Richet, C. Anaphylaxis	(*Liverpool University Press*)	3s. 6d.
Robin, A. Treatment of Tuberculosis	(*J. & A. Churchill*)	18s.
Sawyer, James. Coprostasis: Its Causes, Prevention, and Treatment	(*Cornish Bros.*)	—
Seventh Report of the Henry Phipps Institute, University of Pennsylvania, 1913. Vol. VII.	(*H. Phipps Institute*)	—
Slemons, J. M. The Prospective Mother	(*Appleton & Co.*)	6s.
Transactions of the American Gynecological Society, 1912. Vol. XXXVII.	(*W. J. Dornan*)	—
Veillard, A. La Diabète Arthritique	(*Librairie Medicale, Paris*)	1 fr. 50
Walsh, D. Diseases of the Skin	(*Baillière, Tindall & Cox*)	6s.

EDINBURGH MEDICAL JOURNAL.

EDITORIAL NOTES.

New Arrangements for Clinical Teaching in the Royal Infirmary.

By an agreement recently come to between the University Court and the Managers of the Royal Infirmary, changes have been effected which we do not hesitate to say mark one of the greatest advances that have been made in the arrangements for clinical teaching in the history of the Edinburgh Medical School.

The time was ripe for such a change, and a careful study of the agreement leaves the impression that the parties have approached the question with the single object of providing a scheme of clinical instruction which, without breaking from the best traditions of the school, will be fully abreast of modern requirements.

It is not necessary to have been behind the scenes to appreciate the difficulties which faced each of the parties to such an agreement. When we bear in mind that on each side vested interests, traditions, and questions of patronage had to be respected and important financial matters adjusted, it is easy to realise that success was only possible by the exercise of much reciprocal conciliation in an earnest endeavour to settle matters equitably and with good judgment. That this was the spirit which animated all concerned is evident on the face of the business-like document now before us, and the scheme as here presented is remarkable alike for its completeness and for its adaptability to new circumstances that may from time to time arise. While all who have taken part in formulating the scheme are to be congratulated on the results of their labours, it is an open secret that much of the success of the negotiations is due to the tact, perseverance, and legal knowledge of one of the representatives of the Infirmary Board, to whom every member of the Edinburgh school owes a deep debt of gratitude.

The first condition imposed by the agreement is that the University Court shall appoint a Professor of Clinical Medicine, to whom the wards hitherto in charge of the Professor of Pathology shall be allocated. It is further provided that when the Chair of Materia Medica falls vacant, the wards at present under the charge of the Professor of Materia Medica shall be allocated to a professor or professors of Edinburgh University. From this and other provisions it is evident that the establishment of a second professorship of clinical medicine is adumbrated. The University teaching staff will be further augmented by the appointment of the four senior ordinary physicians in charge of wards to be "Senior Lecturers in Clinical Medicine in the University"

with academical status, and to act as examiners in clinical medicine for the University degrees.

It is also agreed, and this we consider a most important item in the new arrangement, to enlist the services of the assistant-physicians as clinical teachers, and to assign to them an official position as "University Lecturers." Hitherto the position of the assistant-physician with regard to teaching has not been altogether satisfactory. His work was not clearly defined, and varied in different charges. In some he might have a disproportionate amount of teaching, in others none at all. Henceforth he will occupy a recognised position on the teaching staff, and will be assigned a definite share in the work, and this will be to the mutual advantage of the physicians, assistants, and students.

Finally, to each medical charge there will be attached a "University Clinical Tutor," whose duty will be to assist in the teaching of "side-room" work—urinary analysis, blood examinations, examination of sputa, excretions, etc.—and generally the application of laboratory methods to clinical investigation. The tutorial demonstrations will form an integral part of the clinical course, and to admit of the teaching being efficiently carried out, extensive structural alterations are to be made at the expense of the University, to furnish proper laboratory accommodation in which the students can do practical work with a full equipment of apparatus. The tutors will be kept in touch with patients by acting as clinical assistants in the out-patient department.

To ensure that the duties of the different members of the staff shall be co-ordinated, and to secure such a degree of uniformity as is desirable and possible in clinical teaching, the professors and senior lecturers will form a "Clinical Medical Board," to be responsible for the arrangements in regard to the clinical teaching, which shall be under its direction and supervision. With such a staff in each medical charge it should be possible to afford the student a very thorough and practical training in clinical medicine, and to this end it has also been arranged that the students shall, so far as practicable, be divided into seniors and juniors, and taught separately.

It appears to us that the only remaining factor necessary to the success of the scheme is the hearty and loyal co-operation of the student. Hitherto he has been allowed considerable latitude in arranging his course, and has not always arranged it wisely. If the course of instruction which has been provided by the authorities is to succeed, the student must adhere to it. We have sufficient faith in his good sense to believe that he will do so without compulsion.

The new régime has to some extent been anticipated in the Surgical House, as for some years the majority of the full surgeons have acted as University Lecturers on Clinical Surgery and as Examiners. So far as it related to teaching, the arrangement was eminently satis-

factory, and doubtless the success which attended the experiment encouraged the authorities to extend the scheme to the medical side. It is now proposed to place the assistant-surgeons on the same footing as the assistant-physicians as University Lecturers, and to allot a University Clinical Tutor to each charge. The Professor of Clinical Surgery, the Professor of Surgery, and the four senior ordinary surgeons will form a "Clinical Surgical Board."

The Gynecological Department is in future to form a unit in itself on the same lines as the Medical and Surgical Departments.

It should be added that these changes in no way affect the position of extra-mural students in the Infirmary, as special provision is made by which the senior lecturers in the various subjects may, as hitherto, teach the extra-mural students along with the University students.

Although the primary object of this scheme is to improve the methods and to raise the standard of clinical teaching, we hope that it will also do something to encourage research. The more highly educated the student is, the more clearly will he recognise the limits of existing knowledge and the necessity for engaging in original investigation after graduation. We shall not attempt at present to develop this idea, but we would throw out the suggestion that each clinical board might select from its number a "Sub-committee on Research," to whom any member of the staff or other worker in the school could apply for facilities to carry out particular investigations throughout the whole hospital. Such a committee might act as a clearing house for scientific investigation on clinical lines, suggesting subjects to suitable observers, and providing material for those who have found a subject for themselves.

We have not referred to the financial arrangements of the scheme, as these do not concern us. They appear to have been most carefully considered, and show that the University authorities have approached the question in a generous spirit, and, so far as we are able to judge, they are equitable.

The Establishment of a Pathological Institute.

The parties to the agreement have arrived at a most satisfactory solution of the difficulties which surrounded the establishment of a "Pathological Institute" in the Royal Infirmary. It is now decided that during the period of office of the present pathologist, Dr. Sherman, the Professor of Pathology shall be appointed Consultant Pathologist to the Infirmary, and that his opinion may be obtained by any member of the staff in cases in which a pathological investigation is required. The arrangement of the course of instruction in pathology for University students will be under the control of the professor, who will, subject to existing rights, have the use of such material as the Pathological Department provides for purposes of teaching and research. Dr. Sherman becomes Lecturer on Morbid Anatomy, and will continue to

act as Pathologist to the Infirmary. To provide suitable accommodation, the Pathological Department is to be enlarged and equipped at the expense of the University. It is proposed that when the office of Pathologist becomes vacant, the Managers shall, on certain conditions, appoint the Professor of Pathology to fill the vacancy.

We observe that at the present stage provision has not been made to associate the Professor of Bacteriology with the Pathological Department of the Infirmary. The desirability of so doing is so obvious that the question cannot have escaped the notice of those who have arranged the new scheme, and there is doubtless good reason why the matter should have been delayed. The Pathological Department will not be complete unless the Professor of Bacteriology is on the staff, and we are confident that his services will ere long be placed at the disposal of the Infirmary. It appears to us desirable also that the assistant pathologists should obtain official recognition on the teaching staff of the department.

A Selection Committee for Appointments to the Staff of the Royal Infirmary.

Appointments to the offices of Assistant-Physician, Assistant-Surgeon, and Assistant-Gynecologist in the Royal Infirmary shall in future be made as follows:—A Selection Committee of seven shall be nominated by the Board of Management from among their own number, consisting of two University representatives, one each of the representatives of the Royal College of Physicians and the Royal College of Surgeons, and three other members of the Board. This Committee shall nominate two persons, whose names shall be submitted to the Board for any appointment which shall fall vacant, in order that the Board may select one of those for appointment.

In this way, while the appointments to the staff will remain, as they should and must remain, in the hands of the Board of Management, who are ultimately responsible, the various bodies interested shall have a voice in the selection and nomination of suitable candidates.

The Residents' Club, R.I.E.

The 19th Annual Dinner of the Edinburgh Royal Infirmary Residents' Club was held on 27th June. Sir George T. Beatson, K.C.B., President, occupied the chair, and was accompanied by three of his fellow residents in the mess of 1873—Alexander James, Henry M. Church, and James Ritchie. The toast of "The Residency" was proposed by the President in a speech which was at once impressive and brilliant. Among many interesting reminiscences associated with the work of his chief—Lister—he recalled the fact that he attended the poet Henley while he was a patient in the old Infirmary. The reports of the secretary and treasurer showed that the club is in a prosperous condition.

"The British Journal of Surgery."

We offer a cordial welcome to the new *British Journal of Surgery* which appears under the direction of a representative Editorial Committee, the Editorial Secretary of which is Mr. E. W. Hey Groves of Bristol. It is strange that British surgery has for so long been unrepresented in medical journalism. The want has now been supplied, and, if we may judge by the excellence of the first issue, in a worthy manner.

New LL.Ds.

Members of the medical profession formed a considerable proportion of those selected by the Senatus Academicus to receive the degree of Doctor of Laws at the graduation ceremonial held on 4th July.

The only representative of a foreign university singled out for distinction on this occasion was Geheimrat Professor Strassmann, who occupies the Chair of Forensic Medicine in Berlin.

The Dominion of Canada was represented by Dr. John Stewart of Halifax, Nova Scotia, a distinguished alumnus of the University, who enjoyed the personal friendship of Lister from the time he served as his house-surgeon till the end, and of whom the master said: "He is a man I admire, I may truly say reverence." We offer our hearty congratulations to Dr. Stewart, to whom we were recently indebted for the appreciation of Lord Lister which appeared at the time of his death.

The Regius Professor of Natural History in the University of Aberdeen was also honoured, no less for his "broad culture and philosophic outlook" than for his eminence as a biologist. The extra-mural school of Edinburgh will ever be proud that Arthur Thomson was once of its number. The degree was also conferred on Emeritus Professor Greenfield in recognition of his services to the University as a teacher of pathology and clinical medicine, and to the science of pathology as an investigator and trainer of teachers; and on Dr. W. Allan Jamieson, late University Lecturer on Diseases of the Skin, whose pioneer work in establishing and developing the department of dermatology in the Royal Infirmary and whose valuable contributions to the literature of his subject are thus appropriately recognised.

Although we cannot claim Mr. Walter B. Blaikie as a member of the medical profession, he has long been identified with the Edinburgh Medical School as a Manager of the Royal Infirmary, and has done valuable work in promoting the facilities for clinical teaching, particularly in connection with the surgical out-patient department, in the reorganisation of which he took an active part. We offer our congratulations to Mr. Blaikie.

Memorial to the late Dr. George Alexander Gibson.

Friends of the late Dr. George Alexander Gibson will be pleased to learn that the recent appeal for a fund to establish a "Gibson Memorial Lectureship" has already met with a most gratifying response

A meeting of those subscribers who have intimated that they wish to join the General Committee of the Memorial Fund will be convened in October. After this the subscription list will be closed, and a copy, together with the resolutions of the General Committee, will be sent to each subscriber.

In case there may be any of the late Dr. Gibson's friends who did not receive an intimation and who might desire to subscribe, we are requested to state that the Honorary Treasurer of the Memorial Fund is Mr. A. Gray Muir, W.S., 19 York Place, Edinburgh.

Appointments.

The University Court have appointed Dr. James Ritchie, Superintendent of the Laboratory of the Royal College of Physicians, to be Professor of Bacteriology in the University of Edinburgh.

Mr. L. C. Peel Ritchie and Mr. Denis Cotterill have been appointed Assistant-Surgeons to the Royal Infirmary.

On the invitation of the President and Council of the Royal College of Surgeons of Edinburgh, Professor Johnston Symington, Belfast, will deliver the Sir John Struthers Anatomical Lecture for 1914.

The Summer Graduation.

At the graduation ceremonial held on 11th July the following received the degree of *Doctor of Medicine* :—

Bell, F. G., New Zealand ; *** Blacklay, O. H., Ireland ; Brown, J. F., New Zealand ; Brown-Lester, John, India ; Bryson, L. H., Scotland ; *** Bullock, W. E., England ; * Cargin, H. M., Ireland ; Chambers, W. D., Ireland ; Coward, N. A., England ; Cram, John, Scotland ; * Crocket, James, Scotland ; Dart, G. H., Canada ; Davis, S. B., England ; * Dickson, I. D., England ; Drummond, John, New Zealand ; Evans, W. G., Wales ; Findlay, John, Scotland ; ** Firth, A. H., Scotland ; * Gordon, R. G., Scotland ; Grant, A. G. M'P., Scotland ; Gupta, S. C. S., India ; ** Henderson, D. K., Scotland ; * Holmden, H. F., New Zealand ; Horrax, T. H., New Zealand ; * Hunter, A. J. G., Scotland ; Kirkwood, W. D., Scotland ; ** Krause, R. A., Germany ; ** Logan, W. R., Scotland ; Macarthur, D. H. C., England ; M'Clintock, S. A., Ireland ; Macdonald, F. B., Scotland ; * Macdonald, Ranald, Scotland ; * M'Mullan, George, Ireland ; Macphail, J. M., Scotland ; Mann, N. F., South Africa ; Morgan, B. B., England ; Mudie, R. F., Scotland ; * Nelson, H. G. G., Scotland ; ** Nelson, J. J. H., Scotland ; * Paterson, Hugh, Scotland ; Pearson, J. H. H., Scotland ; * Petrie, A. A. W., England ; ** Prasad, Kanta, India ; * Pratt, Dorothy E., India ; Proudfoot, Robert, Scotland ; * Raffan, George, Australia ; Richardson, George, Scotland ; * Richardson, G. Y., Scotland ; Robertson, G. H. W., Scotland ; *** Robertson, G. M., India ; * Shafto, W. A., Scotland ; ** Shaw, J. J. M'I., Scotland ; Shepherd, J. I., Scotland ; Smerdon, E. W., England ; Smith, H. F., England ; ** Smith, W. R., Scotland ; Stuart, Alex., Scotland ; Tennent, B. C., New Zealand ; Walker, R. C., Scotland ; Waugh, W. G., Ireland ; *** Whyte, G. D., England ; ** Willcox, F. M., Australia.

The degree of *Master of Surgery* was conferred on [redacted] Mackenzie, Kenneth, New Zealand; [redacted] Mitchell, A. P., Scotland; [redacted] Ward, L. E. Barrington, England.

[redacted] Awarded Gold Medal for Thesis. [redacted] Highly Commended for Thesis.
[redacted] Commended for Thesis.

The degrees of *Bachelor of Medicine* and *Bachelor of Surgery* were conferred on Adcock, E. W. (1st class Hon.); Addis, W. R.; Anand, H. S.; Anderson, R. P.; Armistead, W. H.; Austin, F. C. K.; Baëza, J. I.; Bahadur, T.; Balkin, I. J.; Barclay, W.; Barron, D. C.; Beckley, E. O.; Brenner, Alexander; Brookes, H. A.; Brown, F. R.; Brown, R. M.; Campbell, Donald; Carlsson, C. P.; Cesari, S. M'A.; Childs, T. W. J.; Christie, G. W.; Clarke, T. W.; Cowe, Archibald (2nd class Hon.); Craig, E. S.; Cumming, J. H.; Davies, Laura K.; Dundee, Charles; Dunlop, A. J.; Edington, J. W. (2nd class Hon.); Elliot, J. S.; Elphinston, Isabella; Falconer, K. D.; Ferguson, G. D.; Foster, F. G.; Fry, A. S.; Gifford, John; Giles, A. C.; Grant, Andrew; Hartley, J. N. J. (1st class Hon.); Henderson, H. B. L.; Hepple, R. A.; Honeyman, Stanley; Hood, J. H.; Inch, T. D. (1st class Hon.); Jackson, T. W.; Khaw Oo Kek, I. J.; Kirkness, F. J.; Laird, D. A.; Lawson, J. I.; Llewellyn, R. B.; Lloyd, R. L.; Low, J. B.; Lunan, G. H.; M'Adoo, Robert; MacCallum, Margaret N.; M'Connell, A. E. P.; M'Kelvey, Daniel; Mackenzie, William (2nd class Hon.); MacNeil, Celia M. C.; Marie, J. G.; Martin, C. de C.; Martin, Douglas; Martin, G. E.; Montgomery, Robert; Morrison, W. K.; O'Neill, H. O'H.; Parker, Wyndham (2nd class Hon.); Percival, Edgar (2nd class Hon.); Pollock, A. N.; Pottinger, David; Pullar, Thomas (1st class Hon.); Rankine, George; Rao, K. G.; Reenen, J. W. van; Robertson, D. S.; Robertson, W. J.; Rogers, C. D.; Ronn, H. A. von; Ross, M. S.; Scales, Cuthbert; Sharples, L. R.; Shiels, P. M'L.; Sinclair, A. F.; Smith, R. W. (2nd class Hon.); Stedeford, E. T. A.; Steel, J. W.; Stenhouse, Isabella; Stewart, A. M.; Thatcher, F. G.; Thwaites, W. St. C.; Tikku, H. L.; Turiansky, M. C.; Walker, Joseph; Washbourn, H. O.; Watson, D. G.; Williams, Gomer; Wilson, George; Wilson, H. W.

The *Diploma in Tropical Medicine and Hygiene* was awarded to Stewart, A. D. (Capt. I.M.S.). *The Diploma in Psychiatry* was awarded to Bedford, P. W. P.; Russell, William; Skene, L. H. *Thesis Gold Medals* were awarded to Oliver Henry Blacklay, M.D.; William Ewart Bullock, B.Sc., M.D.; Alexander Philp Mitchell, M.D., Ch.M.; George Matthew Robertson, M.D.; George Duncan Whyte, M.D. The following Honours were also awarded:—*The Goodsir Memorial Fellowship*—Francis Gordon Bell; *The Ellis Prize in Physiology*—William Ewart Bullock, B.Sc., M.D.; *The Gunning Victoria Jubilee Prize in Physiology*—Marjory Macnaughton, B.Sc.; *The Milner Fothergill Gold Medal in Therapeutics*—John Gordon Sharp, M.D., C.M.; *The Lister Medal in Surgery*—Lancelot Edward Barrington-Ward, M.B., Ch.M.; *The Ettles Scholarship*—James Norman Jackson Hartley, M.B., Ch.B.; *The Allan Fellowship in Clinical Medicine and Clinical Surgery*—Ernest William Adcock, M.B., Ch.B.; *The Freeland Barbour Fellowship*—Thomas Douglas Ineh, M.B., Ch.B.; *The M'Cosh Graduate's and Medical Bursaries*—David Cuthbert Barron, B.Sc., M.B., Ch.B.; *The Murchison Memorial Scholarship in Clinical Medicine*—Alan William Stuart Sichel, B.A., M.B., Ch.B.; *The Beaney Prize in Anatomy and Surgery*—James William Edington, M.B., Ch.B.; *The Mouat Scholarship in the Practice of Physic*—Douglas Martin, M.B., Ch.B.; *The Conan Doyle Prize*—Jacob William van Reenen, M.B., Ch.B.; *The Annandale Gold Medal in Clinical Surgery*—James Norman Jackson Hartley, M.B., Ch.B.; *The Buchanan Scholarship in Gynecology*—James Norman Jackson Hartley, M.B., Ch.B.; *The James Scott Scholarship in Midwifery*—Thomas Pullar, M.A., M.B., Ch.B.; *The Jonathan Gilfillan Memorial Prize*—Isabella Stenhouse, M.B., Ch.B.; *The Wellcome Medals in the History of Medicine*—Gold Medal—Thomas Pullar, M.A., M.B., Ch.B.; Silver Medal—Karl Frederick Sonntag, M.D., Ch.B.; *The Pattison Prize in Clinical Surgery*—John Mitchell Watt; *The Cunningham Memorial Medal in Anatomy*—John Lewis Owen; *The Whiteside Bruce Bursary*—Robert Mailer.

THE PSYCHOLOGICAL CONCEPTION OF DISEASE.

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"Life is the cause, and not the consequence, of organisation."
—JOHN HUNTER.

In recent times a growing number of psychiatrists have begun to admit the utility of dealing with certain forms of insanity from the standpoint of mind rather than from that of brain. This method, moreover, they consider not as a mere temporary expedient to be employed until the minute anatomy or chemistry of the cerebral processes shall have been more completely investigated: they believe the psychological approach to the question to be in itself perfectly valid.

This movement seems to be fraught with no small possibilities in respect to the future development of the whole art of medicine, but it is doubtful whether the full implications of the principle here accepted have as yet occurred to more than a few. For, after all, is the difference between "mental" and organic diseases so fundamental that certain conceptions admitted as regards the one group can properly be rejected in the case of the other?

In the first place, let us consider what this "psychological" conception is, as applied to the class of diseases commonly called "mental." An excellent epitome of certain recent developments in the study of this subject is to be found in a small volume lately published—*The Psychology of Insanity*, by Bernard Hart.[1] This writer points out that, while recent discoveries in cerebral anatomy and physiology (as, notably, regarding the localisation of motor and sensory cortical areas) had raised great hopes that similar methods of research would soon lay bare the causes of insanity, these hopes have been largely falsified by events. "The opinion," he adds, "is rapidly gaining ground that, although the value of the physiological method cannot be disputed, there is ample room for some other mode of approaching the problem of insanity." The new "psychological" conception "is based on the view that mental processes can be directly studied without any reference to the accompanying changes which are presumed to take place in the brain." To the objection that psychological terms (such as, *e.g.*, "complexes," "repression," "unconscious mental processes," and the like) are mere concepts, without objective existence, Bernard Hart very properly replies that exactly the same objec-

tion may be taken to the fundamental terms employed by the orthodox physicist and physiologist (*e.g.*, "atoms," or "ether waves"). The only tests, he reminds us, which any scientific formula is required to satisfy "is the test of utility; it must explain the facts which we actually find, and it must enable us to predict the occurrence of future facts." "Complexes" and "repression" are "conceptions devised to explain the phenomena which are observed, just as in physical science the concepts of 'force' and 'energy' are devised to explain the phenomena of motion."

Now, if psychological concepts are being found so useful in helping us to understand these problems of insanity, is there any *a priori* reason why their use should be considered inadmissible in the case of physical disease?

To give an illustration of my meaning I may here refer to a view of tumour-formation which I have already developed at some length in two previous papers[2]—I mean to the conception of this process as being fundamentally a "dissociation of personality." Numerous observers have been recently coming to realise that the essential standpoint from which the cancer cell is to be approached is the developmental or genetic one. This cell becomes only really understandable when considered with reference to the evolution of the stock to which the affected individual belongs. Cancer is seen to be a reversion to a past historical epoch, or, more exactly, it is a failure on the part of certain cells to recapitulate, as they should normally do, the course taken by their ancestors subsequent to that epoch. The cells may be looked on as having "forgotten" all the more recent racial acquisitions. They have ceased the movement towards increasing individuation, with its correspondingly increasing mutual interdependence, which was manifested by their predecessors. Remaining at a low pre-social level, the cancer cells not merely fail to co-operate with the rest of the cells in body-building, but, by virtue of the rapacious greed and the reproductive activity which characterise such protozoal or amœboid forms of life, they actually become parasitic upon their neighbours. The same state of affairs is to be seen in certain diseases of the blood, as, *e.g.*, in leukæmia, which, in its most malignant forms, is nothing more or less than a "cancer of the blood." There is in these cases, as it were, a partial disintegration of the physical personality—a break-away of some of the structural elements from the ground plan: it is a failure of what Sir Alfred Pearce Gould[3] calls "fundamental cell-

law," and Mansell Moullin[4] "the controlling power of hereditary transmission."

This view, then, of cancer, which more than any other appears to elucidate the subject, postulates the existence in the cell of some sort of "unconscious memory," conveying a tradition of ancestral behaviour.* It seems impossible to suppose that even the minutest description of all the chemical and physical changes involved in the performance of these actions will really help us to "understand" them any better; the "psychological" point of view, on the other hand, at once lets in a flood of light on the problem.

Now, having myself had considerable experience among patients suffering from the more common types of psychoneurosis, I have come to look on many of these as people who have failed to assimilate and to appropriate the more recent specifically human acquisitions of their race or stock, and whose minds, as the result of relatively slight traumata, become temporarily dominated by atavistic modes of thought. They are people, in a word, who have "failed to grow up" properly. Further, having arrived at this conclusion, I more recently became struck with the apparent parallelism between this "historical" aspect in nervous disease and that upon which the pathologists were laying increasing stress in regard to cancer. Was there not to be distinguished in both of these groups a common element?

One illustrative example from the nervous field which comes to hand as I write may be here given. At a recent meeting of the Society for Internal Medicine at Berlin[5] a paper was read on "The Migratory Impulse in Children." A number of cases were related of children who had left their homes in the city and had

* This conception, which has occurred from time to time to various independent thinkers, received a more or less popular presentation over thirty years ago in two works by the English writer, Samuel Butler—*Life and Habit* (1878) and *Unconscious Memory* (1880) (new editions of both, A. C. Fifield, 1910). The most recent scientific exposition of the same idea is Richard Semon's *Die Mneme als erhaltendes Prinzip im Wechsel des organischen Geschehens* (Leipzig, Wilhelm Engelmann, 3rd ed., 1911). Semon has devised an imposing terminology, of Greek origin, and his work has been elaborated with characteristic German thoroughness. Although he is anxious to rebut any charge of "vitalism," and insists that his "engram" is essentially something "material" (*eine dauernde materielle Veränderung der reizbaren Substanz*), still, inasmuch as he makes no attempt to show *how* the mnemic phenomena could be related to this hypothetical *Veränderung*, his theory seems to be really as much a "psychological" one as is Butler's. He supports his views by a great wealth of illustration, and has done excellent service in helping to give a final quietus to the fiction of the absolute non-transmissibility of acquired characters. His book is eminently worth reading.

wandered, in an apparently aimless way, for long distances. They could give little account of themselves or "why they did it," though sometimes unkind treatment at home or the like seemed to have had some determining influence. There was obviously a deeper underlying cause, though apparently the nearest that the lecturer came to it was to say that certain of the cases might be "psychopathic." The suggestion that these children were re-enacting in inappropriate surroundings some important nomadic phase of civilisation passed through by their ancestors seems never to have been so much as hinted at. And yet, how illuminating such a suggestion seems!

Now many, I know, who are quite prepared to accept such explanations of functional and psychasthenic conditions will laugh at any suggestion of applying the principle to organic disease. They will not agree that such resemblances as I have drawn between abnormal "mental" and physical phenomena are anything more than chance ones. They do not see how any general principle can be expected to be at work in both groups.

But let me again ask, Where, after all, is the difference? Do not both classes of phenomena, in last analysis, come under Dr. Charles Mercier's definition of insanity, as "disorders of conduct?" What we actually observe in both are certain unusual movements of living matter. In the case of organic disease these movements are often microscopic, cellular, or molecular, or involve the non-striped "involuntary" muscles. In "mental" disease, on the other hand, the abnormal movements are more evident to the eye. They are carried out rather by the "voluntary" muscles, and, above all, the specifically cerebral element of consciousness or intelligence enters into their execution. A rough-and-ready definition would be that organic disease manifests itself in abnormal *subconscious* life processes, whereas in "mental" disease the abnormal processes are performed consciously. We are quite wrong, however, in supposing (as is commonly done) that, because an action is instinctive or subconscious, it cannot have any fundamental psychic quality. This common faulty reasoning on our part is due to the difficulty we experience in thinking of any "psyche" apart from a brain, or at least a nervous system. We shall have, however, to make ourselves clear on this point. The behaviour of the unicellular amœba, of the fertilised ovum, or of the growing plant is no less "psychical" in essence than the highest artistic expression of human genius. The only real point of difference is this:

the higher forms of life, having to deal with an environment which is constantly increasing in complexity, have been driven to invent for themselves a new weapon of adjustment. This weapon is thought—produced by means of a brain. What is apparently, however, at fault in much so-called "mental" disease is not primarily this mentality or thought itself, nor even the brain which produces it: what is at fault is, rather, those underlying psychic impulses which employ the brain to elaborate for them this thought-instrument. In mental disease it has at no time been supposed that the abnormal movements observed denoted any actual disease in the limbs, etc., which executed these movements. We have been accustomed to look on the mentality (or, more exactly, on the brain which produces this mentality) as the seat of the trouble, but, as I say—in many cases at least—we must go further back, and blame not the instrument but the wielder of the instrument, the psyche.* So in organic disease, among whose sequences no element of thought is interpolated, we have been wont to see mere physical processes, and to look for the essence of the malady in these alone. But, as I suggest, in the organic no less than in the functional diseases there is a fundamental psychic element which is primarily at fault.

This underlying element or principle, then, which acts both consciously and subconsciously, is the "will" or life-impulse itself. Objectively we cannot *know* it at all, but only its phenomenal manifestations. Subjectively, however, we *feel* it to some extent in that inward impulse which drives us towards self-expression—the "will to power." We also experience something of the "past" aspect of the same principle when our emotions are stirred by the remembrance of our racial traditions. It is especially to be noted that both past and future aspects have reference, in last analysis, not to the welfare of our "selves" considered as separate beings, but to that of the community of which we form part. Toward some such conception of

* It goes without saying that a physically damaged brain will "secrete" thought less efficiently than an unimpaired one, though even here the principle that "where there's a will there's a way" holds, to some extent, true; the really gifted artist can express himself with wonderfully unpromising tools. Secondly, a brain which has been badly used for a long time may eventually become organically unsound, and so prove an ineffective instrument, even when "the best will in the world" is brought to bear on it. Our difficulties have mostly arisen from our confounding the will with its manifestations in thought, and therefore supposing it to be, like thought, a product of the brain.

the inner nature of life psychological and biological thought has now for some time been feeling its way. The subordination of individual to racial interests has been, for instance, recognised by Sigmund Freud, though he has given this principle a ridiculously narrow interpretation in speaking of it as "a sublimation of *libido*."

It is probably some such vivid personal experience as that just referred to, especially in its "future," "aspirational," or "self-expressive" aspect, which first convinces us of the existence of a fundamental organising and initiating impulse in life, and the resemblance of the behaviour called forth by this impulse in ourselves to that which we observe in other living creatures suggests, by analogy, that these are animated by a like principle. We notice, however, that the actions of animals, though obviously understandable primarily in reference to the history and destiny of their species, do not include so large an element of consciousness, or, at least, of "intelligence," as do our own actions. We are thus, by a confusion of thought, apt to look on the lower animals as mere automata, and to deny to their activities, as Descartes did, any psychic quality whatever. This is, without doubt, an error.

As with the physiological conditions, so with the pathological aberrations from them. Some distorted working of the life-impulse apparently lies at the root of both insanity and cancer. Moreover, in both classes we get a series of gradations between health and disease. For example, in the mental group we may find the perfect equipoise of the philosopher giving way to a "tendency to worry," and that, if unchecked, developing into hysterical dissociation, and eventually complete mental collapse —the patient has entirely "lost a grip of himself." In the same way in the organic series we get normal tissue-growth, local temporary hypertrophy (*e.g.*, adenoids), simple tumour, and finally malignant neoplasm. In the mental and the physical group alike the patient is afflicted by his own creations, taking shape in the one case through his body and in the other through his brain.

> "And now he fled astray
> With feeble steps o'er the world's wilderness,
> *And his own thoughts, along that rugged way,*
> *Pursued, like raging hounds, their father and their prey.*"
>
> —SHELLEY (*Adonais*).

For "thoughts" in the above substitute "cells," and we have a

picture of the fundamental aspect of cancer. In both cases the essential structural units (cells or thoughts) demit more or less their normal function of co-operation in the building up of the personality. They become relatively less symbiotic and more parasitic. And as the thoughts which grow and proliferate in the mind of the psychasthenic may have been originally either "his own" thoughts, or thoughts "put into his head" by other people, so in the physical series we find parasites either of exogenous or endogenous origin. The endogenous parasites are the tumour cells, developing aberrantly from the patient's own tissues. It is, however, the cells of exogenous origin which we are most accustomed to speak of as parasites. These are the ordinary bacteria and other micro-organisms which cause infectious disease. Furthermore, as in the case of the endogenous tumour cells, the bacteria show all stages between harmlessness and extreme pathogenicity. Thus the diphtheroid bacillus at one end of the alimentary canal and the coliform bacillus at the other ought never to be judged by their face value alone, as, we fear, they not infrequently have been by some of our over-zealous hygienists!

Now, as it is the condition of the psychic background, the strength of the "conscious will," which, *ceteris paribus*, determines whether such ideas as pass from time to time through the mind shall be made to contribute to the welfare and upbuilding of the personality, or shall be allowed to gain mastery over it, and perhaps even to destroy it, so, no less, does the strength of the "subconscious will" (the so-called "soil") determine whether a given micro-organism which has been leading, let us say, the humble but useful life of a scavenger on its host's surface shall retain this ministering saprophytic function indefinitely, or shall suddenly become pathogenic and begin to prey upon his vitals. Meeting in this latter case with little resistance, the microbe may eventually develop such extreme virulence that, if it pass into another host whose relationship with his own bacterial flora is satisfactorily equilibrated, it may without difficulty beat down his defences and infect him with disease. This would explain why many quite healthy people fall victims to epidemic diseases, though they are perfectly well adjusted to the conditions of their ordinary and immediate environments.

Similarly it may be supposed that the somatic cells take on cancerous properties as a result of some defective acting in the "subconscious" will; and when such a cell has acquired in this way a sufficient virulence or pathogenic momentum it is capable,

when transferred to a healthy host of the same species (as has been demonstrated experimentally in mice), of there maintaining for a long time its malignant properties, or even of bringing its new host eventually to the ground. In the same way in sociological matters the invasion of a country by parasitic aliens is, more often than is recognised, essentially due to inadequate development of that country's own resources; and the treatment of this condition by protective tariffs, immigration acts, and so forth, cannot, accordingly, be looked on as having more than a temporary or palliative value. The restrictive or punitive laws designed to crush social parasites of native origin are open to a similar criticism. As provisional makeshifts they often possess value, but it is hopeless to expect that the millennium will be reached, or even approached, by any extension of such merely antiseptic measures.

I have thus, I hope, shown how several large classes of disease may be usefully associated with the general conception of "parasitism": and how this conception is, in its essence, a psychological one.

What primarily and essentially characterises the phenomena of endogenous parasitism, as here understood, is a failure on the part of the structural elements to advance beyond a certain past epoch in their racial evolution: and the mental parasitism of the psychasthenias is, as it were, a domination of the mind by ideas which may have held sway in the childhood of the race, but which have been outgrown or properly subordinated by the patient's contemporaries.

We may suppose that healthy living—the real prophylactic against disease—consists (in the first place, at all events) in a due recapitulation by every individual of the main stages of his ancestral past. Even the merest dabbler in science nowadays knows that embryological development is a *résumé* of racial history. It is possibly, however, less obvious to many people that even in post-natal life—from infancy to maturity—this historical drama continues, normally, to be enacted. Every developing child and adolescent should at least briefly repeat the main occupational and cultural activities of his human ancestors. The embryonic or pre-human stages are performed subconsciously, and are not (directly, at all events) under our conscious control. As the individual's intelligence begins to dawn, however, his own power and our power to make or mar him increases rapidly. Above all things, we should have the greatest hesitation in interfering with the instinctive activities of the growing child. As he passes "in

imagination" through the stages of soldier, sailor, "Red Indian," and the rest he is undergoing a much more perfect education than the most "scientifically" conceived, State-administered system can ever force into him. His best friend will be the one who will take part most sympathetically in this game of make-believe with him, and thus help him more clearly to enter into his historic human heritage. No less than the developing embryo does the growing child "climb up his own genealogical tree," and we incur a more serious responsibility than we realise if we lightly interfere with him at this most essential of all his tasks.*

The importance to children of an "occupational education," corresponding in its outlines to the main cultural stages passed through by their human ancestry, has been emphasised more particularly by Professor Patrick Geddes, who, here as elsewhere, has brought his biological knowledge to bear upon the problems of social advancement. In America, too, the epoch-making work of President Stanley Hall of Clark University has had special reference to this phylogenetic aspect of psychology.[6]

As that dissociation of personality, that break-up of the organic symbiosis, which is known as cancer is seen to result from some cellular neglect of this ancestral tree-climbing, is it not plain that the stability of the higher, consciously directed functions will depend upon the perfection with which the "human" stages of that ascent are carried out?

Now, though teratology supplies us with many instances of aberrant growths occurring in the fœtus *in utero*, we know that the worst forms of neoplasm are met with in adults. Throughout extra-uterine life cells of all sorts of tissues continue to pass through the regular life-cycle, growing from a stage of relative simplicity to one of more or less high differentiation; the organs and tissues of the new individual are by no means formed once and for all by the period at which his birth takes place. At the

* The caution against too ready interference with the child's self-education may probably be extended to our treatment of his characteristic diseases. It is possible that the comparatively mild exanthemata from which children suffer are the representatives of more serious diseases which afflicted their adult ancestors when they were at the stage of civilisation which the descendants are now recapitulating. It would therefore probably be better for the race, and perhaps also for most of the children individually, if they were, in this respect also, allowed to "fight their battles o'er again." It is difficult to see how the elaborate precautions taken by our present-day municipalities against the spread of these simple febrile infections are going in the future to stand the test of enlightened biological opinion.

same time it may be supposed that the more uninterruptedly and naturally the process of tissue-building occurs in embryonic life, the greater the likelihood that all additions and repairs to the structure that may be needed as time goes on will be carried out systematically and in full accordance with the original "builder's plan." We can best secure this normal development during the intra-uterine period of existence by attention to the health of the pregnant mother.*

Again, while no doubt it is particularly during the years of childhood and adolescence that education (in the ordinary sense of the term) is necessary, and while the thoroughness with which the proper historical recapitulation is performed at that time will largely determine the quality of the individual's behaviour (his so-called "mental health") during adult life, still it is almost certainly true that for normal living this same sort of education ought to be repeated from time to time throughout the years of maturity. To keep our mental structure in repair, and to prevent it from undergoing hopeless sclerosis or calcification, we ought frequently to retrace in imagination the main stages of that historic past which has made us what we are.

This simply means that the best provision for the future is a knowledge of one's own potentialities, and that these can only be properly understood by a study of their origins. Hence the value of all methods which help us more clearly to envisage the essential chapters in the story of our race. Here a special word of commendation may be allowed to those historical masques and pageants which are nowadays coming so much into popular favour. Our leading modern psychotherapists now agree that the basis of most of the ailments which they are called upon to treat is an imperfect development of the patient's capabilities—in short, a neglected "education"; accordingly, in their treatment "re-education" is more and more taking precedence of all other methods, hypnotic or otherwise.

There is also reason to believe that a due and orderly unfolding of the individual's "mental" faculties has a guiding and stimulating effect on the more "subconscious" processes, and that thus our physical health may be even more under our conscious control than we have heretofore realised.

This, then, is my thesis. Health consists in an effective, disease

* The interaction of the embryo and its mother is a complex one. It is a mistake to look, as is often done, on the embryo as a parasite on its mother: there is no such thing as physiological parasitism. Before the child's birth it and its mother form one organism.

in an ineffective, reaction of the organism to its environment.* Organisms moving in highly complex environments have developed a unique instrument of adjustment—viz. intelligence—to help them to deal adequately with such environments. Much of what, by a confusion of thought, is called "mental disease" is simply an abnormal reaction of such an organism to its environment—a misuse by it of this intellectual instrument of adjustment. *Natura non facit saltum.* Life proceeds cautiously, repeating again and again the reactions she has found serviceable, before proceeding to experiment further. The repetition, however, is for the sake of the advance; an organism which contents itself with marking time is doomed.

My aim in the present paper has been to demonstrate that certain diseases are best understood from a genetico-psychological standpoint, and that, accordingly, it is first and foremost by the employment of educational methods that we can best ensure the prevention of these diseases in the future.

* Some of the accompaniments of disease are not themselves, strictly speaking, pathological. Thus inflammation may be looked on as a perfectly healthy and "normal" reaction to an extraneous stimulus of relatively infrequent occurrence. Or again, in the "mental" field, certain conduct on the part of highly-gifted and far-seeing individuals is often branded as "cranky," or even insane, when, as a matter of fact, it may have been necessitated by, or at least may form a quite healthy and useful protest against, certain pathological manifestations in the social environment.

REFERENCES.—[1] Hart, Bernard, *The Psychology of Insanity*, Camb. Univ. Press, 1912. [2] Brock, A. J., "Disease as the Nemesis of Reproductive Inefficiency," *Practitioner*, September 1912; "On Tumour Formation and Allied Pathological Processes," *Edin. Med. Journ.*, January 1913. [3] Pearce Gould, Sir A., "Cancer," Bradshaw Lecture, *Brit. Med. Journ.*, 10th December 1910. [4] Moullin, C. Mansell, "The Biology of Tumours," Bradshaw Lecture, *Brit. Med. Journ.*, 7th December 1912. [5] "Berlin Letter," *Lancet*, 15th January 1913. [6] Stanley Hall, *Adolescence*, 2 vols., Appleton, 1904.

TRAUMA IN THE AGGRAVATION OF PRE-EXISTING DISEASE.

By J. GRAHAM M'BRIDE, M.B., F.R.C.S.(Edin.).

FOR some time back a number of new laws have been passed which have for their object the betterment of the social conditions of the people. The Legislature is at times inclined to ignore the opinions of experts, even when dealing with technical subjects, and no more marked example of this can be found than the manner in which the Insurance Act was passed. It is often

difficult to foresee the far-reaching effects of a piece of legislation, and sometimes the new law is actually found to harm some of the class which it was originally intended to benefit. Social laws, however good they may be for the majority, often cause hardship by the application of general principles to exceptional cases, and if such cases, which are not to be expected, occur in sufficient numbers, then there is a reason for some amendment to the Act which works unfairly in those specific instances.

The Workmen's Compensation Act originally became law in 1897, and its scope was extended in 1906 to include practically all classes of employment, so that we have had sufficient time to observe how it affects both employer and employee. For some years past I have acted as Medical Inspector to the North-Eastern Railway Company. My duties include the examination of entrants into the service, and the reporting on cases of sickness and accident. I have therefore had considerable experience as to the effects of the Act as at present administered, and some of the hardships that have come to my notice, both to master and man, are my reasons for writing this paper.

One of our leading medical authorities on the Workmen's Compensation Act, Sir John Collie,[1] has recently published a work in which he deals at length with some of the difficulties and injustices which occur in the working of our laws on compensation for industrial accidents. Among his suggestions for alterations are to be found some which refer to the aggravation of disease or senility by injury. To these I wish in this paper to add some propositions of my own, but first it will be well to explain exactly how the hardships occur, and to give some instances from my own observation which may help to emphasise them.

As the law stands at present, if death or incapacity for work can be proved to have been accelerated, or to be even in a measure due to the accident, compensation must be paid. No matter how diseased or enfeebled the worker may have been, the employer is responsible for all the consequences of the trauma, whether direct or indirect. The laws of France and Germany are on this point similar to our own, but in the former country there has been a certain amount of agitation to get some alterations made in this respect.

Lenoir,[2] who is principal medical officer to the Paris-Orleans Railway Company, discusses the matter very thoroughly, and quotes an opinion expressed by the French Congress of Surgery held at Montpellier in October 1907, the chief supporters of

which were Segond and Jeanbrau. It reads as follows:—"It is desirable that the law of 1898 should be modified in such a way as not to exclude entirely the part played by predisposition and pre-existing illnesses in arriving at the pecuniary benefit to be awarded to the injured man. The modification will lessen the vexatious consequences of the indemnity and forfeiture in permitting one to take count of the lessened responsibilities, and to award compensation exactly proportional to the damage." Lenoir says that in France few medical authorities have attempted to combat these views. The opponents of any such suggestion would naturally be the members of the legal profession. They realise how difficult it would be to show in a Court of law how much of an applicant's incapacity is to be put down to disease or old age, and how much to the accident itself. Balthazard, who was the most active medical adversary of the opinions expressed by the French Congress of Surgery, himself admits that if the accident only draws the man's attention to some defect which had previously escaped notice, it can hardly be put down as a cause of that condition.

Collie suggests that a medical referee should be asked to decide the extent to which an injured man's incapacity can be attributed to industrial accident, and if either party feels aggrieved at his decision there should then be a right of appeal to a higher medical board. Probably this would be the fairest and most satisfactory way of dealing with such difficulties. It is hard for the lay mind to grasp the fact that a man with some serious disease may be able to do his work quite satisfactorily up to the date of a slight accident, and then die shortly afterwards, without that injury having had much to do with determining the fatal issue. As the law stands in this country, in France, and in Germany, if the accident has even somewhat accelerated the death, full compensation is awarded.

An employer is supposed to know all the physical weaknesses and defects of his staff, and must take the risk of employing persons whose condition is such that the results of a trivial accident may be serious. The following case which came to my notice is typical of the hardships that may occur:—A workman, aged about fifty, while at work fell several feet and landed on his back. He was taken home, and began to vomit large quantities of blood. As this continued he was taken into hospital, where an exploratory laparotomy revealed extensive malignant disease of the stomach. Nothing more could be done for the patient, who died a few days

later. Of course death would in all probability have followed in the ordinary course in a few months, quite apart from the fall and the consequent hæmorrhage. It would therefore be fair to assume that justice might have been met by giving the dependants an amount equal to six months' wages. Legal authorities, however, look at such a case in quite another light. In their view we have a workman performing his duties satisfactorily up to the time of the accident; the injuries set up a severe hæmorrhage from the stomach admittedly already extensively diseased; for the bleeding he underwent a severe operation, which was followed by death. The conclusion they arrived at is that death was therefore caused by the accident, and the employers had to settle the case on this basis.

Some large employers of labour now have their workmen examined on entry into their service, so that those suffering from defects which may be aggravated by accident are excluded. There are even a few who submit their men to periodical medical examinations. As regards candidates for employment on the North-Eastern Railway, we attempt to exclude those suffering from hernia or any tendency to this condition, varicose veins, varicocele, and affections of the heart and lungs. My experience leads me to believe that there is probably more imposition with regard to hernia as the result of industrial accident than with regard to any other condition, and this view is borne out by the statements of Barnard and Sherrin,[3] who have written on the subject in Knocker's text-book. There is no doubt that hernia is usually of gradual onset, but if one specific effort or strain is alleged to have caused or even aggravated the condition it is almost impossible to disprove this. It is therefore considered judicious to reject men who have patent inguinal canals. Of course they may be advised to have the condition cured, but there are not many workmen in search of employment who are willing or can afford the time to remain idle long enough to undergo the operation.

As regards the risks of accepting candidates for employment who suffer from varicosity of the veins of the legs, it is only necessary to recall the large number of varicose ulcers in elderly men which are attributed to injuries, often of a very trivial character. I have also come across several instances in which attacks of phlebitis have been put down to accidents at work. I also reject men with varicocele for the following reasons:—A certain number of cases of inveterate neuralgia testis, in which

a varicocele is present, and in which the condition is said to have resulted from trauma, have come before me. The same difficulties again present themselves as occur in cases of hernia when operation is advised before the candidate can be admitted to the service —he does not like the idea of an operation, or he has not the wherewithal to support himself and perhaps a family while he is undergoing the period of enforced idleness which is necessary after the varicose veins or varicocele have been removed.

Of course any applicant for work who has scars indicating former tuberculous bone disease should be rejected. As showing the necessity for this, let me shortly give the following case:—A carriage gasman fell from the roof of a vehicle on which he was attending to the lamps. He struck the lower part of his spine in falling, and had to cease work at once. I saw him some months later, and one of the first things that struck me was the scar from an old psoas abscess, from which he had suffered as a lad. The fall, it turned out, had relit the tuberculous disease of the spine. This set up a myelitis from which he never recovered, and he has never been able to work again. In such a case the man ought not to have been admitted to the service at all. He had, however, started in the days before the medical examination of candidates for employment was enforced.

Numerous instances of heart dilatation occur which are put down to some strain or accident at work. Some of these are uncomplicated by valvular disease, but in most there is a history of a former attack of rheumatic fever and perhaps endocarditis. On investigation it is found that the patient has suffered for some time from precordial pains or uneasiness and attacks of dyspnœa. One day while doing some extra laborious piece of work he has to give up, and to this strain or accident his incapacity is attributed.

Employers object nowadays to take on a workman who has lost an eye, and although one-eyed men are often quite efficient, this is hardly to be wondered at. They are usually engaged in some trade, such as boiler-making, fitting, etc., in which the eyes run considerable risk from flying sparks and scraps of metal. The following instance gives some idea of how an employer may be mulcted for his consideration in employing a man who has lost an eye:—A painter's labourer had one eye badly injured in early youth, so that the globe was atrophied. In the course of his work the sound eye was injured by a foreign body, and a corneal ulcer resulted. This was very slow in responding to treatment, and

later a certain amount of hypermetropia was discovered. The man refused to return to any work whatever, and was quite consistent in his statements as regards loss of sight. Finally, the case was disposed of by the payment of a lump sum far greater than the actual injury itself justified.

In the same way a man who has had an injury to his hand resulting in stiffness or total loss of one or more fingers may claim excessive damages for a further injury to the part. Employers are therefore very chary in these days of taking on a workman who has not the complete use of all his fingers. It is not because such a man may not be a very useful workman, but rather that results of industrial accidents may be so much more serious to him. It has been held that a man who has some shortening of a limb after a fracture of the leg is greatly handicapped in his search for work. Collie quotes a case in which an award of compensation at the rate of 5s. a week for life was made in case a workman should not be able to get employment.

Pre-existing disease may either aggravate an injury or itself be accelerated by the accident. As examples of these two propositions the following cases of diabetes may be cited :—

1. *Injury Aggravated by Diabetes.*—A goods loader, aged 55, in September 1907 had the third, fourth, and fifth toes of his right foot injured by a forequarter of beef which he was handling falling on his foot. He was off work for a few days, but remained under medical treatment some weeks. In February 1908 he again went off work, and I examined him on the 28th of that month. The nail of the fourth toe had been removed, revealing an unhealthy-looking ulcer, while the nails of the two neighbouring toes showed signs of injury. On 12th March, as there were signs of necrosis of bone, the toe was removed, but shortly after this gangrene set in. He was taken to hospital, where the leg was amputated, and it was discovered that the man suffered from diabetes mellitus. The operation was performed on 16th March and the patient died three days later. The relatively slight accident of September 1907 was indirectly the cause of death in a man whose system was enfeebled by the disease, and the employers had to accept full responsibility.

2. *Diabetes Aggravated by Injury to the Head.*—An engine-driver, aged 45, was examined by me on 11th September 1907. He had been off work since December 1906, suffering first from influenza and then from diabetes. He said he felt able to resume work, and in spite of my advice to the contrary was allowed to

do so upon a shunting engine. On 3rd February 1908 the engine on which he was working was derailed, and he was thrown about in the cab, striking the back of his head with considerable violence. He was unconscious for some minutes, and was taken home. He never worked again, and from the date of the accident complained of headache and giddiness. He died on 24th December 1909. From September 1907 up till February 1908 he did his work satisfactorily and regularly, so that he must have felt fairly well. On 17th February 1908, when I saw him, he looked extremely ill, and was much emaciated. It is well known, of course, that diabetes mellitus can be brought on by head injuries, and in the same way it must be admitted that the disease, if already present, may be aggravated.

Probably Feilchenfeld[1] is right in his statement that the results of chronic alcoholism are the most typical instances of disease which may be accelerated by trauma. The workman thus affected certainly runs more risk of accident, and the consequences are also likely to be more serious. The tissues are unhealthy and repair of wounds is slow, while infection is liable to occur. Everyone knows how prone the drunkard is to erysipelas, which sometimes ends in death. After severe injuries or operations, moreover, alcoholic delirium is especially liable to set in, and the patient may do himself great harm by disturbing his splints and dressings. Though of course the trauma is a determining cause of the delirium, it is the man's abuse of alcohol that makes the ultimate results so serious. The employer has therefore to pay an increased amount of compensation because the injured worker has been a drunkard. What has been said as regards alcoholism may also be applied to syphilis. With the disease in the system it often only requires some slight trauma to light up serious complications. The specific lesions most frequently met with in workmen as the result of trivial injuries are ulcers of the leg, which are very slow to heal, and chronic periostitis of the tibia, following a slight blow. Though specific disease may be the predisposing factor in such conditions as general paralysis of the insane and tabes dorsalis, trauma may at times be the exciting cause.

It should not be forgotten in this connection that sometimes the disease which is said to have been brought on by injury has itself been the cause of the accident. The following is the history of a case of locomotor ataxia which was alleged to be of traumatic origin. The claimant, however, had his application for com-

pensation dismissed before the County Court: — A middle-aged labourer was engaged to carry bags of grain. While carrying the first bag along a plank he fell and the bag rolled over him. He attempted to carry another, but failed, and had to give up work. The description of the fall by onlookers was that the man's legs seemed to give way under him. Nothing further was heard of the matter until 2½ months later, when a claim for compensation was made. I examined the man and found him suffering from well-advanced tabes dorsalis. There were present marked ataxic gait, inco-ordination, loss of tendon reflexes, and Argyll-Robertson pupils. He gave a history of specific infection as a youth. In the subsequent arbitration proceedings the applicant failed entirely to show that he was able to work immediately before the accident, and the County Court judge dismissed the case, as the employers had been prejudiced by the length of time that had elapsed between the alleged accident and the claim for compensation. To my mind it is perfectly obvious that the man's fall was due to the locomotor ataxia, which made it impossible for him to walk along the plank carrying a load on his back.

Probably a certain number of cases of general paralysis of the insane, in which the exciting cause of the disease is injury to the head from a fall, come under the same category. The so-called congestive attacks which are met with in the early stages may be the real cause of the fall, although the allegation that the diseased man simply slipped cannot easily be refuted. At least one such case has come to my notice, but in the arbitration proceedings which ensued he was awarded compensation.

An engine-driver, aged 49, while doing something to the engine, fell from the footplate to the ground, cutting the back of his head. No one saw the fall, and little was thought of the matter as he was only absent from duty three days. Five months later he ceased work and went away for a change of air, but while absent became suddenly acutely maniacal, and was confined in an asylum, where the symptoms of general paralysis of the insane became evident. Besides examining the man I had the privilege of hearing the case tried and the evidence which the various doctors gave in Court. The significant feature of the case to my mind was that the claimant, in giving the history of the accident to one of the medical men, stated that while at work he suddenly felt his legs give way under him. I know that at least one of the lunacy experts engaged on the case was quite convinced that the fall was due to the disease. There were, how-

ever, obvious signs of early specific infection, and the claimant obtained judgment on the grounds that though the predisposing cause was syphilitic, the exciting cause was the injury to the head.

It is not only the diseased or maimed who are at a great disadvantage in their search for work because of the risks in employing them, but nowadays masters look askance at applicants who are over middle age. It is a recognised fact that sometimes a comparatively slight trauma in a man over fifty years of age may be followed by what may best be described colloquially as "a general break up." Until the injury the man does his work as well and as expeditiously as his fellows, but by the time the local manifestations have disappeared he has become a really old man—"*véritable veillard*" are the words used by Vibert,[5] who goes on to describe two classes of such cases. The first is characterised chiefly by general weakness, emaciation, and atrophy of the muscles; in the second the predominating features are mental, such as we see in senile dementia and cerebral softening. Examples of each class have come under my notice.

Thus we see that one result of the Workmen's Compensation Act is to help to increase the numbers of the unemployed through employers of labour not wishing to run undue risks. Many of the men who are thus thrown on the rates are quite capable of doing good and useful work, but are not given the opportunity. It is not uncommon to hear a man who has been refused a position because of some physical disability say how he wishes he were allowed to "contract out." He is quite willing to give an undertaking not to claim compensation should the incapacity for work be directly or indirectly due to the special trouble from which he suffers, but there is no provision under the Acts to permit him to do so. Collie mentions that contracting out has been adopted in New Zealand and Queensland, and it may perhaps be the solution of this problem. It is of course obvious that the system could only be applied in exceptional cases, and that some form of official control should be kept of those which do occur, otherwise the labour market would be seriously affected, and employers might give preference to men who agreed not to claim compensation. A diseased or maimed man seeking work might be allowed to "contract out" on producing a certificate to the effect that his case is suitable from, say, the factory surgeon or the medical referee for the district. In my own opinion, if these suggestions were adopted, many hardships which affect both employer and employee might be obviated.

One other proposal may be worth considering, and it is made feasible by the fact that the National Insurance Act is now in operation. If Collie's plan of referring cases to medical referees or special medical boards were adopted, it could be made the duty of these officials to decide the exact percentage of the incapacity due to the accident. A proportionate amount of compensation would be awarded. For instance, if 25 per cent. of the inability to work is due to the injury, and the compensation under the Act as at present administered, that is, half wages, amounts to the maximum £1 per week, then the award would be 5s. This sum would then be made up to 10s. by contributions from the National Insurance Fund, as is done at present when the weekly sum received under the Workmen's Compensation Act is under that amount. Ten shillings is the maximum weekly payment under the Insurance Act, and it might be possible further to alter the latter Act so that the contributor could get the exact proportion of the weekly 10s. to which, what I may be allowed to call the balance of his incapacity, might fairly entitle him. This is perhaps a little involved, but if we refer to the instance above mentioned my meaning will be made clear. Here suppose 75 per cent. of the inability to work is due to ordinary disease, then, in addition to his proportion of compensation, the injured workman would receive 7s. 6d. from the National Insurance Fund.

A much more drastic alteration in the present laws may ultimately be made which will bring payments under the Workmen's Compensation Act into line with those under the National Health Insurance. As in the latter Act, the costs might be borne by the State, the employer, and the workman, and if the various bodies could agree, the health insurance and compensation funds might be amalgamated. A workman who is suffering from ordinary illness through no fault of his own would then receive half wages, just as when laid up by an industrial accident. It is of course obvious that there are many interests involved, and much opposition would be forthcoming from friendly societies and insurance companies. One of the chief difficulties would be to arrange the representation of the parties involved on the administrative bodies which would control the funds. I am sure, however, that if the costs of payment of compensation were in part borne by the men themselves there would be less malingering. The question of deciding whether a man may be incapacitated by disease or accident, which is often determined with much difficulty, would not need to be discussed. I quite realise that it will

be some years before such changes can come to pass, but modern legislation is tending all in this direction, and I feel sure that it is the real solution to the difficulties in the working of the present Act, both as regards the aggravation of pre-existing disease by injury and the other important question of malingering.

Finally, let me hope that in discussing the question of accident and pre-existing disease I have shown how some of the injustices of the Workmen's Compensation Act, as at present framed and administered, hit both master and man, the first directly, and the second indirectly. Remedies to overcome these difficulties satisfactorily are not easily found, but probably more suggestions would be forthcoming if the hardships were better known. My own feeling is that these matters have not in this country been given all the attention they deserve.

REFERENCES.—[1] Collie, *Medico-Legal Examinations and the Workmen's Compensation Act*, London, 1912. [2] Lenoir, *Conférences sur les Accidents du Travail et les Affections Traumatiques*, Paris, 1909. [3] Barnard and Sherrin, *Accidents in their Medico-Legal Aspect*, edited by Douglas Knocker, London, 1910. [4] Feilchenfeld, "Uber die Verschlimmerung Konstitutioneller Krankheiten durch Unfall," *Monatschrift für Unfallheilkunde*, March 1907. [5] Vibert, *Les Accidents du Travail*, Paris, 1906.

SIMULTANEOUS ELECTRO- AND PHONO-CARDIOGRAMS.*

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THE present communication deals with some work which is being undertaken by us in the Clinical Research Laboratory of the Royal Infirmary of Edinburgh.

It is first necessary to give a brief description of the apparatus employed. It is the so-called "Universal-Registrier-apparat" (Bock-Thoma model), and consists essentially of three parts:—

1. An oscillograph.
2. An arrangement of microphones.
3. A table on which is placed the necessary apparatus for recording the movements of the strings.

Possessing, as it does, four different strings, not only are electro-cardiograms readily recorded, but also electrical tracings

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of the heart sounds, and, if desired, of the mechanical movements of the apex beat or of the brachial or jugular pulse are simultaneously obtained.

The oscillograph is an electro-magnet in the field of which four strings are placed, one for the electro-cardiogram, one for the phono-cardiogram, while the other two may be used for recording any of the mechanical movements above mentioned.

The strings are slung over small glass hooks which are attached to spiral springs. By this means the tension of the strings can be altered at will.

Each string carries a minute mirror which reflects the light from an arc lamp on to the sensitised paper, which is set in motion by means of a motor, the speed of which can be adjusted as desired.

An important point to observe is that the strings are not aperiodic, but for all practical purposes they are perfectly satisfactory.

To record an electro-cardiogram the patient places his arms and feet (according to the derivation required) in insulated zinc baths filled with normal saline solution. The action currents of the heart are led off from these to the oscillograph, passing on their way through a condenser which automatically compensates for all slow alterations of potential. A testing key is introduced into the circuit, and when this reveals a string deflection of 1 cm. the string possesses the requisite degree of tension.

For the phono-cardiogram either a phonendoscope or a special instrument introduced by Groedel is applied over the desired area of the præcordia, and is connected by rubber tubing to the microphone. Here the sound waves are transformed into electrical energy.

The current through the microphones is supplied by a dry cell (1 volt). An arrangement of sliding resistances is provided (two for each string) which together with the microphones and the galvanometer forms a Wheatstone bridge. By means of these resistances the extent of the deflections of the string can be controlled.

It is not advisable to attempt to record maximal deflections of the string. Such an attempt will inevitably result in the distortion of the tracing by accidental vibrations. The deflections of the string should rather be reduced so far as is consistent with a perfectly distinct tracing.

In a similar manner mechanical movements are transmitted from tambours or receivers along rubber tubing to the microphones, where they are transformed into electrical energy.

The time is recorded in tenths of seconds in the following manner:—Part of the light from the arc lamp is reflected from a mirror on to a second mirror revolving by clockwork. This revolving mirror casts a reflection every tenth of a second on the sensitised paper. For a full description of the instrument reference may be made to the writings of Bock[1] and Gerhartz.[2] An interesting comparison of the merits of the oscillograph and the string galvanometer, so far as their electro-cardiograms are concerned, is to be found in an article by Groedel and Meyer-Lierheim.[3] Suffice it to say that although with the oscillograph it is more difficult to bring out the finer points of an electro-cardiogram owing to the fact that the string is not aperiodic, still all the deflections are usually readily discernible. This is at once seen in the accompanying normal electro-cardiogram (Fig. 1, Derivation 2).

Fig. 2 is a phono-cardiogram from the normal heart.

Turning now to simultaneous electro- and phono- cardiograms of the normal heart, the exact relationship in point of time of the first and second sounds to the peaks of the electro-cardiogram can be at once determined. The vibrations due to the first sound begin at a point corresponding to the peak S of the electro-cardiogram. Allowance must, however, be made for the time taken in the transmission of the sound waves from the chest wall to the microphone. This was found to be almost exactly 0·01 second. Further, the majority of our phono-cardiograms were taken from the second intercostal space, to eliminate as far as possible the mechanical movements of the chest wall, and Fahr[4] has shown that the first sound at the base begins 0·02 to 0·04 seconds after the first sound at the apex. This observer has also drawn attention to the occurrence of certain small vibrations which he terms the "initial vibrations," and which are usually not recorded in tracings from the second intercostal space. These "initial vibrations" are seldom evident in our tracings. Fahr believes they correspond to the period of rising tension in the ventricles. Taking these factors into consideration, we conclude that the beginning of the first sound corresponds very nearly to the peak R, but may occur as late as the middle of its katacrotic limb.

Lewis[5] finds that the time relation of the first vibrations is variable, but that they usually begin shortly before or after the peak R.

With regard to the second sound, we have found from comparison of a large number of tracings that the initial deflections due to it begin 0·05 second after the summit of T. The delay in

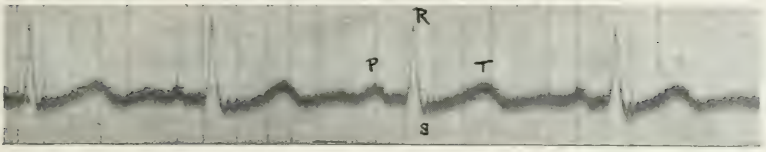

Fig. 1.—Normal electro-cardiogram (Derivation 2).

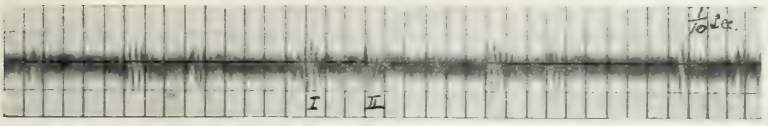

Fig. 2.—Phono-cardiogram from base of healthy heart.

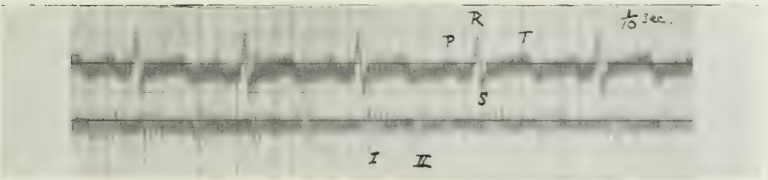

Fig. 3.—Simultaneous electro-cardiogram (Derivation 2) and phono-cardiogram from base. Normal heart. I. = 1st sound ; II. = 2nd sound.

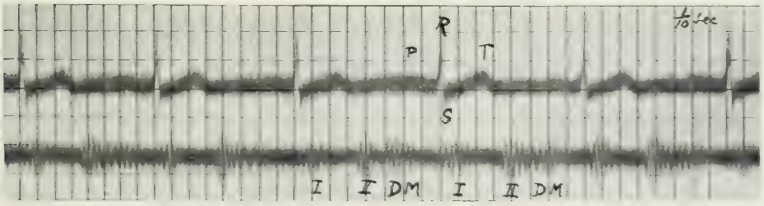

Fig. 4.—Simultaneous electro-cardiogram (Derivation 2) and phono-cardiogram from apex. Mitral stenosis, showing purely diastolic murmur. DM = diastolic murmur.

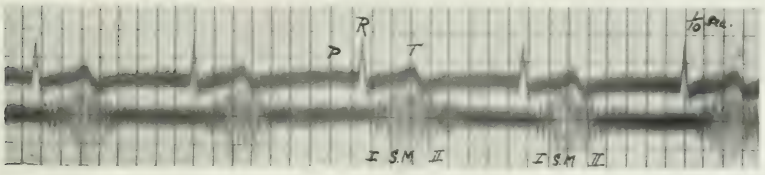

Fig. 5.—Electro-cardiogram (Derivation 2) and phono-cardiogram from 2nd intercostal space. Congenital pulmonary stenosis. SM = systolic murmur.

the transmission of the sound waves must again be taken into consideration.

The frequency of the vibrations due to the first sound varies in normal hearts from 70 to 85 per second, that of the vibrations due to the second sound from 80 to 100 per second.

Fig. 3 is a simultaneous electro- and phono-cardiogram from a normal heart (Derivation 2). The phonendoscope was placed over the base of the heart.

Fig. 4 shows the appearance of the phono-cardiogram in a case of mitral stenosis, the murmur being purely diastolic. The tracing corresponds exactly with what was heard on auscultation. The frequency of the vibrations due to the murmur is 60 per second. The tracings clearly show that the string is absolutely at rest during the period of auricular systole.

Fig. 5 was taken from a boy aged 15, the subject of congenital pulmonary stenosis. It shows the first sound immediately followed by a series of deflections of great amplitude, corresponding to the loud systolic murmur which was present. The vibrations due to the second sound are distinctly seen in their normal position.

Our grateful thanks are due to the trustees of the Clinical Research Laboratory for making this work possible. We also have pleasure in expressing our thanks to those members of the staff of the Royal Infirmary who have kindly placed their material at our disposal.

References.—[1] Bock, G., *Münch. med. Woch.*, 1910, lvii. 526. [2] Gerhartz, *Die Registrierung des Herzschalles*, Berlin, 1911. [3] Groedel, T., and Meyer-Lierheim, *Berl. klin. Woch.*, 1911, 1082. [4] Fahr, G., *Heart*, 1912, iv. 147. [5] Lewis, T., *Brit. Med. Journ.*, 1912, ii. 1700.

CASE OF CONGENITAL DEFECT OF ABDOMINAL MUSCLES, WITH ANOMALY OF URINARY APPARATUS.

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The following case seems worthy of record, on account of its rarity and the extremely interesting nature of its pathology:—

A boy aged three weeks was sent to the Sick Children's Hospital by Dr. Thomas Finlay for advice about the abdomen, which had been noticed to be flat and flaccid since birth. He was well otherwise, and had thriven satisfactorily on the breast. Both parents were healthy, the mother being 36 and the father 37 years old. This was the seventh pregnancy. There was nothing to note about the other children, and there had been no miscarriages. The labour was normal, there being no hydramnios. The front of the chest was noticed to be quite flat at

birth, but had within a few days assumed its present prominence. Nothing abnormal had been noticed by the mother as regards the functions of the bladder and rectum; there had been no constipation, and the urine had been voided freely without any apparent pain.

The following notes were taken at the time of admission:—

The baby is fairly well developed, the weight with clothes being 6 lbs. 12 ozs. The nose is broad and flat, and there is slight asymmetry of the pinnæ of the ears.

The thorax looks short, and is wide below. The anterior wall is markedly prow-shaped, and the range of respiratory movements imperceptible. The nipples are normal in position and appearance.

The appearance of the abdomen is very striking, the wall being slack and baggy, plastered down on the organs, and bulging over the flanks. When the baby is set up this redundancy of the abdominal wall shows as transverse creasing (Fig. 1), and there are also permanent longitudinal furrows of varying depth which cannot be completely smoothed out (Fig. 2). This is because each has a line of white scar tissue along the bottom, resembling very closely a marked degree of striæ gravidarum. The umbilicus is represented by one of the longest and deepest of these furrows in the middle line, midway between pubes and xiphisternum. There is no resistance whatever, even when the baby cries, although the movements of the diaphragm can be made out.

The outline of the solid abdominal organs can be easily seen and felt, the lower border of the liver and spleen respectively reaching three finger-breadths below the costal margin (Fig. 2). The bladder, when full, shows as an abdominal organ, reaching almost to the umbilicus and a little inclined to the right. It is about the size of a hen's egg, tapering above and below. When empty it is felt as a spindle-shaped body lying deeply in the middle line, and in both states is very firm. In front of the lower part of the bladder, in the middle line, but more superficial, a small, round, fluctuating body can be made out. It is about half an inch across, freely movable within moderate limits, and it does not vary in size with evacuation of urine. The ureters cannot be seen or felt, the coil in the left flank being later shown to be small intestine. Both kidneys are easily made out, and do not seem enlarged. Both testicles are undescended. Mr. Stiles examined the hip-joints, and found a slight degree of congenital dislocation on to the dorsum present on both sides.

The child throve well, and gained weight steadily at the rate of an ounce a day. On several occasions he passed water while being examined, without any apparent pain or difficulty. The stream looked of about the usual size, and the amount of urine did not seem excessive.

When two months old he died somewhat suddenly with symptoms of broncho-pneumonia.

Fig. 1.

Fig. 2.

Fig. 3.

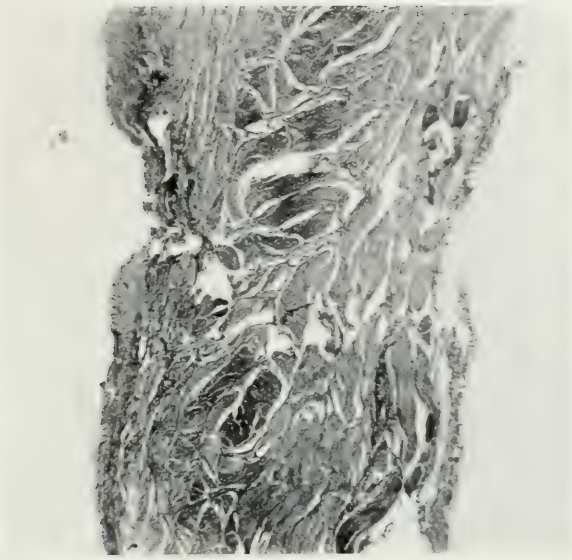

FIG. 4.

Similar section from normal bladder. ×10.

FIG. 5.

Longitudinal section, anterior wall of bladder. ×10.

The post-mortem examination, which was limited to the abdomen, was made on the following day in a cottage in the country.

On reflecting the skin of the abdominal wall one was at once struck by the almost complete absence of muscular tissue in the usual situations. Only for an inch or so below the costal margin was there any trace of the recti, each being represented by a thin indefinite band of fibres. Transverse sections through the normal position of the recti above and below the umbilicus, and also through the anterior part of the lumbar region, were stained by van Gieson's method, and no muscular tissue could be recognised in them. The psoas and other posterior abdominal muscles, the thoracic and perineal muscles, and the diaphragm seemed normal.

The apex of the bladder was attached to the region of the umbilicus by the remains of the urachus, which was only half an inch long, and took the form of a longitudinal band of fibrous tissue. There was also another cord-like band about one inch long which connected the anterior wall of the bladder to the anterior abdominal wall, and in this part the cyst palpated during life was developed.

The bladder, turned down in the photographs, was seen to be enormously dilated and hypertrophied (Fig. 3). It measured three inches from apex to base, and two inches across at its widest part. On opening it by an anterior incision, the wall was found to be between $\frac{1}{4}$ and $\frac{3}{8}$ of an inch in thickness, and was very firm. The urethral and ureteral orifices were not dilated in any way, and a large probe passed easily from the bladder through the urethra, and *vice versâ*. A fine probe could with difficulty be passed into the ureteral openings, and there was no sign of kinking. It had previously been found impossible to regurgitate urine from the bladder into the ureters by pressure over the viscus, although it could easily be expressed from the urethra. Similarly, on pressing over the ureters, the resistance was so marked that it was doubtful whether any urine passed on into the bladder or not.

Sections cut from the bladder wall in a longitudinal direction were compared with those from a normal child (Figs. 4 and 5). They showed a great increase in the fibrous tissue elements in all three coats, especially the submucous. The muscular coat was much broken up by this fibrous tissue, the stroma penetrating it from the subperitoneal and submucous layers. The lining epithelium showed catarrh.

Both ureters were greatly dilated and tortuous, closely resembling both in size and general appearance the small intestine which lay over them (Fig. 3). The walls were thinned, and the dilatation ended abruptly at the bladder, for the intra-mural portion was very narrow. The ureters entered at their usual situation. They showed no sign of kinking, and were patent throughout.

The right kidney was small, with marked hydronephrosis, the left about the usual size, with the pelvis but little dilated. In both the fœtal lobulation was well marked. The suprarenals appeared healthy, and the relations between bladder and rectum showed no abnormality. Both testicles were found lying free just below the kidneys, and seemed normal in every way.

The stomach was narrow and contracted, the bowel and pancreas normal, with no dilatation of any part of the former. The liver and spleen showed no change. There was no sign of recent or old peritonitis.

In the right lung there were considerable patches of broncho-pneumonia and collapse in all three lobes, this being the cause of death.

To sum up, then, there was marked hypertrophic dilatation of the urinary bladder, with dilatation of the ureters and hydronephrosis, without any organic obstruction to the urinary flow. The abdominal wall was very lax, the abdominal muscles were completely absent in their lower and antero-lateral parts, and the thorax markedly prow-shaped anteriorly. The testicles were undescended. There was some asymmetry of the face and pinnæ of the ears, and slight congenital dislocation of the hips. The urinary functions had been carried on quite satisfactorily, and the child had thriven well until it developed broncho-pneumonia, of which it died at the age of two months.

This case illustrates typically a group of malformations which has been but seldom described, for I have only been able to collect thirteen other examples from the literature. Of these the first three—those of Fröhlich, von Ammon, and Henderson—are incomplete and quite unsatisfactory. The remainder fall into line with the case now described, and a scrutiny of these eleven cases shows the following characteristics :—

The age of death, if this occurred, was—within a few days, 1 case (Parker); about one month, 1 case (Bolton); within two months, 3 cases (Guthrie, Garrod and Davies, and the present one); about nine months, 2 cases (Bolton and Hall, Batten).

Of the others there were alive—at two years, 1 case (Platt); at three years, 1 case (Mollison); at six years, 1 case (Osler); at seventeen years, 1 case (Stumme).

These figures show at once that some degrees of the condition are compatible with life, and in only one case was anything noted amiss with the functions of the bladder. Here there was frequency of micturition, with the passage of between 60 and 80 ounces of urine per day (child aged 6 years). Catarrh of the vesical mucous membrane was found in the present case. Specially interesting was Stumme's case, where laparotomy was done at the

age of seventeen years, in order to separate the apex of the bladder from the umbilicus. Cystoscopic examination had shown the bladder wall to be unduly thrown into folds, and the orifices of the ureters to be displaced somewhat from their usual situations. It was therefore considered possible that the ureters, and also the urethra, might be kinked, causing obstruction. After the operation the bladder wall presented a more normal appearance, and it was concluded that the obstruction had been relieved. As, however, the patient had lived until the age of seventeen years, some rearrangement must have been arrived at long before the operation was done at all.

All the cases reported have been *males*.

Some asymmetry of the skull and of the pinnæ of the ears was also noted by Garrod and Davies, and in their case there was double talipes equinus in addition.

The pear-shaped deformity of the thorax, together with the widening of its lower margin, can be accounted for by the absence of the usual mooring down of the chest wall by the recti and other abdominal muscles. The thorax is flat at birth, and becomes deformed with the onset of respiratory movements.

The testicles were described as undescended in all the cases except one, and in it the point was not mentioned. This would be caused by actual blocking up of their path by the enormous bladder, interfering with the formation of the gubernacula.

The great shortening of the urachus, so that the bladder is fixed almost directly to the anterior abdominal wall, is striking It is accounted for by the early dilatation of the bladder. In this way the organ comes to be formed, not only from the central third of the intra-embryonic portion of the allantois, as is usual, but also from the outer third up to the body wall. This is important, because the pull of the bladder when it empties itself is now direct on the abdominal wall, and not exerted on the lax, cord-like connection of the normal urachus. In one case the urachus remained patent.

The appearance of the abdomen is at once very suggestive of great previous distension, which had always disappeared before birth (Figs. 1 and 2). In no case has any sign of previous ascites been found. The longitudinal furrows, with the umbilicus represented in the bottom of one of them, can best be explained in the following manner:—Owing to the extreme intra-abdominal tension in earlier life the deeper layers of the skin are ruptured. When this pressure is removed the pull of the contracting bladder,

now direct, would naturally throw the lax abdominal wall into longitudinal folds, and these would fall along the lines of weakness.

The microscopical examination, fully described by Batten, may be summarised as follows:—The oblique and transverse muscles are comparatively well developed at the periphery posteriorly and below the costal margin. Elsewhere there is nothing to show that the muscular tissue has ever been present. The fibres of the aponeurosis, which form a striking feature in normal sections, are here almost entirely absent. The few muscle fibres present resemble unstriped muscle, or striped muscle at a very early stage of development. There is nothing to show that atrophy of previously formed muscular tissue had taken place, and the spinal cord was found to show no deviation from the normal. Guthrie, and also Garrod and Davies, described the quadrati lumborum as thin, imperfect sheets of muscle. Apart from these, no other muscular defect has been described. Mollison's case, when re-examined after one year, was thought to show more resistance in the middle line, apparently due to further development of the recti.

The condition of the urinary tract is typical of these cases, and in none of them was there ever found any organic obstruction to the flow of urine.

Congenital hypertrophic dilatation of the bladder, associated with dilatation of both ureters and hydronephrosis, is often found without co-existing changes in the abdominal musculature.

Firstly, when secondary to an organic obstruction of the urethra. If a congenital malformation, this is usually about the posterior part, presumably because of a more complicated origin from the urogenital sinus. This obstruction may be valve-like, and therefore not impede the passage of a catheter. Excessive phimosis has also been considered a determining cause.

Secondly, without any organic obstruction of this sort, Arzt ascribed it to hydramnios, with consequent upsetting of normal balances. The amniotic fluid, however, has frequently been observed to be scanty. As an alternative he agrees with the theory of previous temporary obstruction, such as kinking of the ureters, the neck of the bladder, or the penis. John Thomson suggested that this obstruction is caused at the neck of the bladder, and is functional. There is a developmental defect of the nervous mechanism governing the co-ordination of the muscle, and therefore the sphincter fails to open when the distension of the viscus reaches a certain pitch. This results in hypertrophic

dilatation, which may become very great. Later on the bladder is able to empty itself, and the excretion of urine continues, even although the anatomical changes are so marked. In this way the condition shows analogies to other congenital affections—hypertrophic stenosis of the pylorus, and idiopathic dilatation of the colon.

It is possible that the ureteral dilatation and hydronephrosis may be a later effect, and due to partial occlusion of the intra-mural portion of the ureters by the greatly hypertrophical bladder wall. If caused by direct back pressure, the ureteral openings would be dilated, which is not found to be the case. It has been shown experimentally that, under normal conditions, the intra-ureteral pressure is very slight. A comparatively small increase results in complete stoppage of urinary secretion.

The occasional association of these changes with mal-development of the abdominal wall musculature has been explained in several ways. Bardeen, from a purely embryological standpoint, suggested two possibilities:—First, that the condition of the muscles is primary, and, owing to this lack of resistance, when the bladder begins to fill with urine it tends to expand rather than to expel its contents through the urethra into the amniotic cavity. Second, that both conditions are due to a common cause, viz. an abnormal arrangement in the blood-vessels of the embryo, whereby the formation of the membrana reuniens — the early covering of the abdominal cavity—is interfered with. Consequently, the growth of the flat enclosing muscles does not occur. At the same time circulatory disturbances give rise to abnormal conditions found in the bladder and ureters. A third and more practical explanation is that first accepted by Stumme. It is that the muscular defect is secondary to the greatly increased intra-abdominal tension caused, during some period of intra-uterine life, by the enormous size of the bladder.

This suggestion is the most feasible for the following reasons :— (1) The appearance of the abdomen is in every way very suggestive of previous great distension. The presence of the furrows and the abnormality of the umbilicus have already been accounted for. (2) Nothing has been found to account for this except the enormously hypertrophied bladder, which has also expanded to its furthest limits up to the anterior abdominal wall. (3) It is evident, from the extent of their connections, that the anterior abdominal wall and the anterior wall of the bladder have been, at one time, in very intimate contact. (4) The area over which the

muscles are absent is roughly one which would be subjected to direct pressure by a tumour in the lower part of the abdomen, and anchored to the umbilicus. Elsewhere they are comparatively well developed.

It is therefore probable that these muscles are prevented from growing forward in the usual manner, for it has been shown that there is not an atrophy, but a complete lack of development of the muscular tissue. I can find no record of any other instance of symmetrical absence of parts of several pairs of muscles. Moreover, there is a possible parallel to this mal-development from pressure in those cases of congenital unilateral pectoral defect.

In conclusion, I wish to express my indebtedness to Dr. John Thomson for permitting me to publish the case, and also to Dr. Thomas Finlay for much valuable information.

LITERATURE.—1. Arzt, *Verhandl. d. Gesellsch. deutsch. Naturforsch. u. Arzte*, 1910, 7. 2. Ballantyne, *Antenatal Pathology and Hygiene; The Embryo*, Edin., 1902. 3. Ballantyne, *Edin. Hosp. Rep.*, 1893, 381. 4. Batten (see 11). 5. Bing, *Virch. Archiv.*, 1902, clxx. 175. 6. Bailey and Miller, *Text-Book of Embryology*. 7. Bolton, *Clin. Soc. Trans.*, 1905, 247. 8. Bolton and Hall, *Lancet*, 1907, ii. 1672. 9. Bryant and Hale White, *Guy's Hosp. Rep.*, 1901, 17. 10. Burn Murdoch, *Edin. Hosp. Rep.*, 1893, i. 498. 11. Fortescue Brickdale, *Bristol Med. Chir. Journ.*, 1905, 231. 12. Garrod and Davies, *Med. Chir. Trans.*, Lond., 1905, 363. 13. Guthrie, *Trans. Path. Soc.*, Lond., 1896, 139. 14. Henderson, *Glasg. Med. Journ.*, 1890, 63. 15. Holt, *Diseases of Infancy and Childhood*, 6th ed., Lond., 1912, 607. 16. Knox and Sprunt, *Amer. Journ. Dis. Child.*, September 1912. 17. Mollison, *Guy's Hosp. Rep.*, 1909, 23. 18. Morton, *Rep. Soc. Study Child. Dis.*, 1903-4, 329. 19. Osler, *Johns Hopkins Hosp. Bull.*, 1901, xii. 331. 20. Parker, *Clin. Soc. Trans.*, 1895, 201. 21. Starling, *Principles of Human Physiology*, Lond., 1912. 22. Stumme, *Mitt. a. d. Grenzegeb. d. Med. u. Chir.*, 1903, 548.

LITERATURE AND MEDICINE.*

By J. W. BALLANTYNE, M.D., F.R.C.P.E.

THERE is a literary side of medicine and there are medical aspects of literature. Apollo was god both of medicine and of poetry.

In these words, or in other words with a similar meaning, I spoke to myself some years ago; and with this idea as a starting-point I went forward in thought to the inevitable goal of a journalistic age like the present, a periodical which should busy itself with the literary aspects of medicine and the medical aspects of literature. Why should these two high and beneficent arts not find their representation within the same pair of boards? Why

* An address to the Edinburgh Women Students' Medical Society on 31st January 1913.

should their close connection not be made obvious to the world at large and to the medical and literary worlds in particular? Why should not poets—and by poets I meant all literary men who could write with grace, elegance, truth, and power, whether in metrical or in non-metrical composition—and physicians both find enjoyment, interest, and even improvement in the contemplation of that borderland, so to say, which lies between their now separated but once conjoined spheres of activity? Why should there not be, to waste no more words, a Journal of Literary Medicine or a Magazine of Medical Literature?

It was a fascinating notion, and the more I thought on it the more it attracted me. My mind having raised, so to speak, this idea, proceeded to chase it pertinaciously and with alacrity; and the idea, like a chased creature which dreads not the hunter and has no fear of being caught, gambolled on in front of me, curveting, turning, twisting, doubling as the manner of such things is. I followed hard after it, my mind happening to be alert, swift, and untiring. I was in no hurry, however, to catch the idea, for there was pleasure in the pursuit greater perhaps than any joy I could have got from the capture. In the end, after running almost side by side for a time, my idea and I lay down together in mutual satisfaction; we were ready to compare our sensations.

I had already in my mind's eye the picture of the first part of the journal. It must have a title of course, and one which should clearly indicate its contents and purpose. I thought at first of *Medical Notes and Queries*, but found, somewhat to my disappointment, that my friend, Dr. Cattell of Philadelphia, had annexed that name for his bright little journal; his periodical, it is true, was along other lines, although along lines that were both good and interesting. But, obviously, I could not have it; and after all that is not lost which a friend gets. I then thought of a title with a fine ring about it, such as *Literary Annals of Medicine*; but it sounded to me a little solemn and reminiscent of Gray's *Short and Simple Annals of the Poor*, or of Galt's *Annals of the Parish*. I tried next a Latin one, *Acta Medica Literaria*, having perhaps Coleridge's *Biographia Literaria* in my thoughts, but it looked terribly heavy, and I felt sure I should not be able to write brightly under that banner, so I threw it down too, for I wished above all things to write brightly. My journal was to interest the wearied medical man and to give novel thought to the literary fellow, so of course it could not be suffered to be dull. *Acta Medica Literaria* sounded dull, very dull. Finally, I left the title

unsettled, although I was inclining to *Literary Medicine*, with perhaps the sub-title *Medical Aspects of Literature*, and went on to the contents.

The contents presented no difficulty. Many interesting subjects sprang quickly into my mind. I had no hesitation in giving first place to a scholarly (I hoped it would be scholarly) article entitled, Was Dante a doctor? It should consist of a careful investigation of all the evidence, both in Dante's works and outside of them, bearing upon the question of the great Florentine poet's knowledge of medical matters. Was his acquaintance with medical things so profound and so correct as to justify the conclusion that his belonging to the Guild of the Physicians and Apothecaries was more than an empty form? That would make very well the *pièce de résistance* of the first number of my journal.

Then I thought to myself there should be a series of articles on old English works on surgery, medicine, and midwifery, and I planned that the leader of them should be Raynalde's *Byrth of Mankynde*, that strange sixteenth century manual which found its way into the palace of the Queen and into the hovels of the poor in the days of bluff King Hal and his many wives. These were to be thoroughly literary in stamp; the editions were to be carefully described, and the leading differences in matter, in typography, in illustrations, and the like set forth; the medical knowledge revealed in them was to be compared with that of to-day; the literary style was to be put alongside of the best authors of the time; and sidelights were to be caught from non-medical books of the same period or thrown upon such from this book.

I passed next to the less bulky articles. I should have a series of easily-read papers telling some of the things that literary men had said about doctors, and perhaps another series giving hints of what doctors had thought about their literary patients. I foresaw under this heading the possibility of letters to the editor arriving with fresh information on the relationships which had existed between the two bands of the followers of Apollo, the poets or makers and the doctors or remakers. My mind leapt on to the commencement of a discussion in the pages of the journal on such a question as, Had Shakespeare chorea when a child? or What doctors did Dr. Johnson consult when writing his *Dictionary?* But the prospect in that direction was boundless, and "the mental eye grew large with such a vast circumference of thought."

Then there might very well be a series of articles on medical

proverbiology. I was convinced that this subject contained rich finds for those who were ready to dig deep enough down into it. There were many proverbs in dispraise of the doctor, and possibly prolonged search might discover a few proverbs in his honour, but of course the latter would be reckoned as almost priceless pearls. There were proverbs about food and others, mostly ambiguous in tenor, about drink, and some of the diseases had proverbs all to themselves. Oh, there could be no doubt about it, this would be an attractive part of the journal.

I imagined next some research work into the question of how far a training or a partial training in medicine influenced the after-life, and especially the literary output of such men as had once been medical students and had then gone over to literature, become poets (although no one can become a poet, for is he not born?), novelists, historians, or philosophers. It would be a most interesting task to re-read with such a purpose the well-known works of such men as Sir Arthur Conan Doyle (the creator of Sherlock Holmes), who was at the University in my time; of Campion the poet, who was first a doctor; of Samuel Smiles, who studied medicine in Edinburgh and practised it in the little sleepy town of Haddington before he wrote *Self-Help*, *Thrift*, and the *Lives of the Engineers*; of Goldsmith, who was once a member of the Royal Medical Society of Edinburgh; of James Hutchison Stirling, who wrote a book on cholera (as seen by him in practice in Wales) long before he discovered and interpreted for British ears the secret of Hegel; of Dr. Andrew Wilson, whose previously acquired medical knowledge came to the surface in almost every popular lecture that he gave; of Gordon Stables, who was William Stables, M.D., C.M., of Aberdeen, before he was heard of as the author of *Kidnapped by Cannibals*; and of many others who were perhaps "stickit" doctors but who certainly shone out as bright ornaments of the profession of letters. It would be a most fascinating research to try to make out how far these men had managed to divest themselves of the robes of the doctor when they put on the livery of the servants of the Muses.

Yet again there would, of course, be articles on the works of the men who continued to practise medicine, surgery, and even obstetrics, and nevertheless attained to positions of literary altitude such as might well cause pangs of envy in the breasts of those whose hands grasped the quill but had never guided the lancet. Into my mind there came the names of Sir Thomas Browne, the learned knight of Norwich, with his armful of books,

his brilliant *Religio Medici*, his erudite *Vulgar Errors*, his heart-searching *Christian Morals*, and his tender *Letter to a Friend*; of Oliver Wendell Holmes, the discoverer of the contagious character of puerperal fever as well as the parent of the *Autocrat*, the *Professor*, and the *Poet at the Breakfast-Table*, and the creator of the weird *Elsie Venner*; of Dr. John Brown, the genial author of *Rab and his Friends*, of *Horæ Subsecivæ*, and of the *Letters*; of Mark Akenside, the Edinburgh medical student and the London physician, who scored so great a success with his didactic poem, *Pleasures of the Imagination*; and of many others whose names and achievements were hovering around the outskirts of my memory. In this connection I remembered that it was not so long ago since Sir Douglas Maclagan, the Professor of Medical Jurisprudence in Edinburgh University, wrote poems which we used to applaud when he sang them at our College dinners and other functions; that the late Professor of Practice of Physic penned a play on Queen Mary; and that the present President of the College of Physicians had written a novel.

My mind next passed by one of these real but often quite untraceable links of thought to the literary men who had only had a smattering of medical knowledge, who had been no more than first- or second-year students, but who, nevertheless, had carried memories with them into their books which could be easily recognised as relics, perhaps useless relics, of their early professional studies. Keats and Southey at once came into the range of my mental vision. I imagined an article on Southey, the poet laureate of his day, "with eyes running at full gallop," as Carlyle described him, pointing out how he had grievously disliked the dissecting-room, and had fled from its confines to the slopes of Parnassus, indicating also that the medical strain in him had never been quite eradicated, and pointing to some of his poems and prose, such as "The Surgeon's Warning" and *The Doctor*, in proof thereof. I thought also of a paper on the medical element in the life of Abraham Cowley, the admired poet of the Caroline period, with his clever conceits and his far-fetched similes. One would have to consider whether his M.D. of Oxford was simply a blind to conceal his real purpose in being in England in the years before the Restoration, or was a true indication of the presence in his brain of medical as well as metrical knowledge. I inclined to the latter view, for his six books *Of Plants* really constituted a sort of Gerarde's *Herbal* in rhyme, and contained a great deal of information about simples which might very readily pass nowadays for materia medica.

I had now got together in thought a sufficient number of articles dealing with the medico-literary borderland to fill not one but many parts of my prospective journal, and as yet I had only approached the subject from the one side. So far I had been thinking of the contributions made by medical men to literature. I had considered the doctors who had given up medicine, wholly or nearly so, for literature, and those who had continued to practise their profession and had at the same time distinguished themselves in *belles lettres* and in poetry; and I had cast a glance at the men who had had a sprinkling of medical knowledge, enough to tinge their subsequent writings to such an extent as to be recognisable by anyone on the lookout for it. I had, however, paid no attention to the doctors who had written works on medicine which were also literature and not merely the loosely constructed and jejune cram books of the pre-examination weeks of misery. Neither had I given a thought to the medical missionary literature which was beginning to come back to us from the ends of the earth; but I ought to have thought of it, for I had had the privilege of reading in manuscript descriptions of foreign lands and customs, tales of Eastern life full of humour and pathos, narratives of hairbreadth escapes from peril, of adventures and magnificent heroism, and stories of those touches of Nature which make the whole world kin, all of them more worthy of perusal than the majority of the ephemeral books and pamphlets which crowd our library tables, and some of them entitled to a place beside the classic writings of past ages.

But, as I have already said, these were only aspects of one side of the subject; my mind had still to roam over the other side. I had been drawing upon the literary aspects of medicine, and had not so far touched the medical aspects of literature. By this I meant several things. I meant, for instance, the use of medical figures of speech in general literature. I could foresee an article on the proper and appropriate employment of metaphors and similes drawn from medicine, surgery, and the other departments of professional life illustrated by apt quotations from Shakespeare, Milton, Browning, and other poets, not to name prose writers of essays, history, philosophy, fiction, and adventure. It would be necessary to warn the young author against the too frequent use of medical metaphors, and to point out to him the extreme care which would be required if he were not to make his writing grotesque or even offensive. The ancient Hebrew prophets were able to make their utterances bold and

striking and arresting by the introduction of medical and even of obstetrical comparisons which in the hands or from the pens of the men of to-day would be simply repulsive. Even the Puritan divines must have strained the powers of appreciation of their hearers in the seventeenth century with the quaint and uncouth, if homely and graphic, medical phraseology of many of their analogies and titles. Sibbes was a special offender in this path of conduct, and one is almost afraid to have his books in open view on the table or in the shelves of the bookcase.

But, on the other hand, how apt a medical metaphor or simile may be in the writings of such a master as Shakespeare! There are many such, but here are one or two taken at random. In *Richard II.* the Duchess pleads for the life of her son, but the Duke says to Bolingbroke:

> "This fester'd joint cut off, the rest rest sound;
> This let alone will all the rest confound."

In *Hamlet*, the King of Denmark, apostrophising England, says:

> "Since yet thy cicatrice looks raw and red
> After the Danish sword."

and again a few lines lower down, speaking of Hamlet, he cries out—

> "For like the hectic in my blood he rages
> And thou must cure me."

In all these comparisons one sees the meaning in a moment, and without any, at least with very little, special medical knowledge. Even Shakespeare, however, goes sometimes very near the limit in the technicality of his medical allusions. Not to leave *Hamlet* there is that description (in the fifth scene of the first book) of the effect of poison on the murdered king—

> "And a most instant tetter bark'd about,
> Most lazar-like, with vile and loathsome crust,
> All my smooth body."

only one must note that Shakespeare was not here speaking figuratively; he was describing real appearances in the medical language of his time, and was probably perfectly well understood by his contemporaries.

Still, an author should be careful not to make his medical comparisons too technical, for the moment the mind of the reader goes off hunting down the meaning of the phrase he has lost his attention. For instance, in a recent writing, Sir James Crichton-

Browne's introduction to *New Letters and Memorials of Jane Welsh Carlyle*, a description is given of Mrs. Carlyle's dislike of Lady Ashburton, in which it is said: "This was jealousy, and as jealousy is a malignant and metastatic growth, we need not be surprised to find her soon giving way to more unworthy suspicions, and to bitterness and despondency." Now the comparison of jealousy to a malignant growth is apt and telling, and no one can fail to see the truth of the metaphor. The fact that jealousy resembles the malignant growth in its metastatic tendency is also perfectly true, and in the mind of a pathologist, as no doubt in that of Sir James Crichton-Browne, it is clearly recognisable and adds force to the metaphor; but "metastatic" is not a common word, and its meaning is not apparent to the ordinary reader. Sir James Murray, in his *New English Dictionary*, gives no illustrative quotation of it save from technical works, and he does not refer to its figurative use at all. It would have been better, therefore, to have shorn the metaphor of it, or to have indicated that it meant "travelling from one part to another in the body." Still, this may be said in defence of such a practice, that the difficult metaphors of one age become the hackneyed ones of the next.

My thoughts had wandered far away from the idea of a journal of literature and medicine by this time, but I drew them back again, and began to consider possible articles on books full of medical facts and yet written by authors who were not doctors. Prominent among such books is *The Anatomy of Melancholy*, by Robert Burton. What an amazing work it is! It was the only book, said Dr. Johnson, that ever took him out of bed two hours sooner than he wished to rise; notice, he does not say it kept him out of bed two hours later than he wished to sit up. Burton does not capture his reader at once, for his pages are overburdened with quotations; everything he says seems to have been gotten from someone else, and it looks uncommonly hard to peruse even a single page. As one goes on, however, one gets into the swing and the stride of it; a sort of marching rhythm hums in one's ears, and the metaphors and similes and quotations go tramping past like an army entering into battle. When Burton has had his fair chance he holds his reader bound hand and foot, and *his* readers are high up in the aristocracy of literature. Good was the description of him: "Burton—by profession a divine, by inclination a physician." Let no one forget that parting piece of advice of his, the last English words in his immortal book, "Be not solitary, be not idle":

"which," wrote Dr. Johnson, "I would thus modify: 'If you are idle, be not solitary; if you are solitary, be not idle.'"

Then there would certainly be an article, or perhaps several articles, on Wesley's treatise on medicine. John Wesley was no doctor, yet his *Primitive Physic*, which was published in 1747, reached its twentieth edition in 1781 and its thirty-sixth in 1840. Defoe's *Journal of the Plague Year* was another great book on a purely medical subject by a wholly literary man; it so imposed upon Dr. Mead that he quoted it as an authority in his book on the same subject. This list might be lengthened; but it was sufficient, I thought to myself, to bear in mind some of the more modern poets such as Henley, who wrote so delightfully of Lord Lister, as he lay and watched that great surgeon making his daily rounds with his crowding band of students in the old Royal Infirmary of Edinburgh—that hospital, "grey, quiet, old, where Life and Death, like friendly chafferers, met." Here are a few of his lines on *The Chief*:—

> "His wise, rare smile is sweet with certainties,
> And seems in all his patients to compel
> Such love and faith as failure cannot quell.
> We hold him for another Hercules
> Battling with custom, prejudice, disease,
> As once the sons of Zeus with Death and Hell"

Then it came to me that all this time I had been thinking wholly, or almost wholly, of British medicine and English literature. There would of necessity have to be articles on foreign literary men who had been great writers on their art, and Trousseau of the Hôtel-Dieu, with his *Clinical Medicine*, fine in style, full of matter, readable as a classic, leapt into my mind. Dr. Goethe—great, grand, gigantic almost, among Germany's great sons—was not doctor of medicine, but he found time to make contributions to the sciences of anatomy, physiology, and embryology which were of the highest value; and he had views on such matters as the intermaxillary bone which were far in advance of his age. Herder was a contemporary of Goethe; him De Quincey has called the "Coleridge of Germany." He began to study medicine, but, like Southey, he found the dissecting-room too much for him, and his love of the healing art died; so he passed to literature, and to the study of Hebrew poetry and other things. I foresaw many articles on such men as these if this journal on literary medicine was to be truly international. There was St. Luke, too, the beloved physician (ὁ ἰατρος ἀγαπητος) of St. Paul, and the author of two of the world's

greatest books; and there was Homer himself, away back at the very beginning of things, whose knowledge of anatomy was so great that someone has said that he might have been a house-surgeon.

I was by this time quite convinced that it would be comparatively easy to find attractive material for many numbers and even volumes of a journal of literary medicine. No apprehension was to be felt on the score of supply; but what about the demand for such a journal? On that subject I entertained misgivings, and, as the event sadly showed, my fears were only too well founded; but that grief was not yet to be suffered, for between it and me lay the writing of the first number. I set myself to it and prepared a well-packed specimen part. There were two long articles, one on the influence his medical training had had on a poet, and the other on the literary merits of a physician's letters. There were several shorter papers, dealing with apposite and inapposite medical metaphors, with the drug habits of great authors, with the effects produced by bad health on literary men and women, with curious medical customs as revealed in the pages of old novels or in the chapters of new works of travel, with medical men as portrayed in fiction, with medical biography, with medical iconography as throwing light on medical biography, with famous formulæ by famous physicians, with popular descriptions of great but quite imaginary operations in surgery, with pictures supposed to illustrate fits and demoniacal possession, and so on. None of these was of an exhaustive nature: they all were intended to excite rather than to satisfy interest, and they were to be followed by others in later numbers on the same or on closely allied subjects. There was a leading article on literature and medicine, bristling with classical allusions and quotations, to be set up in large type, with double leads, and what someone has called "other forms of typographical hysteria." There were two or three columns dealing with the lighter side of medical literature, and giving the *jeux-de-mots* and *jeux-d'esprit* of dinners and social gatherings which had shown more than a passing brilliancy and laughter-provoking power, and were worthy of preservation. There were notes on interesting *ana*, scraps of information, and anecdotes about well-known doctors of the past, and especially about those who had been rude to their patients and had been well rewarded for it. There was a short paragraph, or perhaps there were two, on popular medical terms in use in various parts of the country. Space was left for the reproduction of facsimiles of a few old and rare engravings of medical

subjects, of freaks, and of documents. There was a leaderette on the periodical medical literature of a hundred years ago; and a commencement was made with a complete list of all the medical journals which had died, with their age at death. A plea was made for the compulsory registration of all such departures in the future, but it was not thought to be necessary to press for a Notification of Journalistic-Births Act, since these interesting events were generally widely referred to in the newspapers. There were even some Letters to the Editor (written by the editor), with prompt and doubtless satisfactory answers appended to the easiest of them. Finally, there was the usual make-up of notices of new books, reviews, choice excerpts, and the like.

I had almost forgotten to mention that there was a sort of prefatorial motto for the first page, which read thus—"Reader, loe here a well-meaning booke" wrote Montaigne (as rendered by the faithful but not always exactly literal Florio) in his little preface to the famous *Essayes*; and, without a like power of performance, but with the same good intention, the editor of *Literary Medicine* says, "Reader, loe here un journal de bonne foi." I was somewhat satisfied with the look of the journal *de bonne foi* in MS., and I longed to see it in print; but alas and alack! those who have to do with such typographic transformations wore faces which were sad; they feared there was no place for the little journalet, no, not even as a quarterly; the medical public had no time for such things, and the literary men would only smile at it and not on it. I had to take it home again. It was rejected *en bloc;* but there was still a hope that it might be acceptable in pieces, so I sawed it up. There was a good deal of dust, but I got some nice good-sized bits and polished them up a little, and sent them off to some kind-hearted editors of elderly medical journals, and they took them in and even put them in their front rows (so to say).

So ended my journal of literary medicine; but I was sorry, it was such a "well-meaning journal."

THE LOCAL INCIDENCE OF CANCER IN RELATION TO FUEL.

By C. E. GREEN, F.R.S.E.

In a recent number of this *Journal* I dealt with the local incidence of cancer in Nairnshire, in view of the fact that it had the highest death-rate from this disease in Scotland, and showed that the cancer mortality, although high, was confined entirely to that portion of Nairnshire in which *coal* was burned, only one case

having occurred during the last ten years in the purely *peat* burning district of Ardclach, which covers about 100 square miles and has over 1000 inhabitants. This case, which was one of rodent ulcer, occurred in the northern part of Ardclach.

I am convinced that the etiology of cancer will ultimately be found to be connected in some way with the fuel question, and the facts shown in the map which was published with the paper referred to seemed so striking that I was urged, not unwillingly, to undertake a similar investigation on another county as a check on my previous results.

For several reasons I thought that Orkney would be the most suitable county. Its cancer mortality is slightly above the normal, the average for the whole of Scotland being 4·023, while that of Orkney is 5·32.* It is a county with practically no manufactures to confuse the issues, whose inhabitants are mainly farmers or fishermen; but what appealed to me most was the fact that it is split up into many islands, on some of which nothing is burned but peat and on others nothing but coal, as the peat bogs have been worked out.

The first step in the investigation was of course to get the address of every patient who had died from cancer in these islands during the last 10 years, and by the kindness of the Registrar-General for Scotland I was given the privilege of personally going over all the Orkney death registers for the last 10 years and noting these addresses. I found that in all, for the 10 years from 1902 to 1911, the number of cancer deaths, including sarcoma and rodent ulcer, amounted to 286 out of a total of 4051, or an average of 1 death out of 14 from all causes. The proportion of cancer deaths to those from all causes in the various registration districts and islands, however, varied very markedly, as will be shown by the following table. It is a curious and almost incredible fact that in North Ronaldsay, although 56 deaths from all causes were registered in the 10 years, the cause of death was always given as "unknown, no medical attendant." This explains the omission of North Ronaldsay from the table.

TABLE SHOWING THE PROPORTION OF CANCER DEATHS TO DEATHS FROM ALL CAUSES IN THE REGISTRATION DISTRICTS OF ORKNEY.

Birsay	.	.	1 cancer death in every 8 from all causes.		
Deerness	.	.	1	„	„ 15 „
Eday and Pharay	.	1	„	.	„ 11 „

* *Edin. Med. Journ.*, 1903, vol. i. p. 23.

Evie and Rendall	.	1 cancer death in every	14	from all causes.	
Firth . .	.	1 „	„	13	„
Flotta . .	.	1 „	„	20	„
Harray . .	.	1 „	„	10	„
Holm . .	.	1 „	„	20	„
Hoy and Graemsay	.	1 „	„	25	„
Kirkwall .	.	1 „	„	17	„
Orphir .	.	1 „	„	18	„
Papa Westray .	.	1 „	„	9	„
Rousay and Egilshay	.	1 „	„	28	„
St. Andrews .	.	1 „	„	11	„
Sanday .	.	1 „	„	9	„
Sandwick .	.	1 „	„	11	„
Shapinshay .	.	1 „	„	7	„
South Ronaldsay	.	1 „	„	22	„
Stromness .	.	1 „	„	27	„
Stenness .	.	1 „	„	42	„
Stronsay .	.	1 „	„	22	„
Walls . .	.	1 „	„	20	„
Westray .	.	1 „	„	16	„

The preparation of a map showing the exact location of each death, as is given in my paper on Nairnshire, has been a very difficult undertaking, and cannot yet be completed for months, as many of the names are not given on the ordnance map, and involve correspondence with local people in order to attain accuracy. In the meantime, however, I have written every parish minister in Orkney asking details regarding the kind of fuel used in his parish, and cannot thank these gentlemen sufficiently for the trouble they have taken in giving me full particulars.

As there is no wood in the islands the fuel is either peat or coal, or, as I find very often to be the case, a mixture of the two. There are, however, certain districts in which absolutely nothing but peat is burned, and these show, as I expected, a death-rate below the average. In Stenness, for example, which has a cancer death-rate of only 1 out of 42 from all causes, peat is the universal fuel. The same is the case in Hoy, Rousay, Walls, Flotta, Orphir, and Stromness except in the town. Where only coal is burned, as in Papa Westray and Sanday, the proportion of cancer deaths to those from all causes is, as will be seen, 1 in every 9.

On the other hand, however, I was compelled to admit that in three districts at least there was a very high mortality from

cancer in what appeared to be purely peat-burning districts. In Birsay, for example, cancer accounts for 1 death in every 8, and in St. Andrews for 1 death in 11, and both are almost entirely peat-burning districts. At first I thought that there must be some mistake, and that the patients must have burned some other fuel, but I was assured in several cases by the ministers of parishes, who kindly made the fullest inquiries, that cases had undoubtedly occurred in houses where nothing but peat had ever been burned.

In view of the Nairnshire results this seemed unaccountable, until it occurred to me that there might be peats and peats, and that the peat used in Orkney might differ materially from that used in Nairnshire. Accordingly I got samples from the peat-stacks of various districts, and the result was a complete surprise.

These samples were unlike any peat which I had ever seen before. They handled like coal, were hard and stony in appearance, and, when portions were burned, crackled like coal and gave out long blue flames totally unlike the ordinary peat fuel, which simply smoulders and glows. On comparing one of these specimens of so-called peat with the Nairnshire, in colour the former was a dull black, while the latter was a warm brown, and bulk for bulk the Orkney peat was 3 times heavier than the Nairnshire.

If the ordinary characteristics were a surprise, the chemical analysis was even greater. I asked Dr. Drinkwater to analyse a sample for its sulphur contents, and his report was as follows :—

> "I must apologise for delay, but as the first analysis of the peat was extraordinary, I resolved to do it again myself, and my results confirm the first analysis. I find it contains 0·75 of sulphur, and approaches coal in character."

In view of this surprising result I decided to have a careful analysis made of the fuel burned in several districts which had a low or non-existent cancer mortality, and compare this with samples of Orkney peat. For this purpose I procured—

1. Peat from 2 bogs, Moss Side and Glenferness, in the Ardclach district of Nairnshire referred to in my previous paper, in which district there had not been a single case of cancer in 10 years among 1000 people.
2. A sample of peat from West Ross-shire, where I was assured by Dr. Pender Smith of Dingwall that after many years' experience he had never seen a case.

3. A sample from a moss near Fornighty, in Nairnshire, where the one case of rodent ulcer had occurred.
4. A sample from Nistaben, in the centre of Stenness parish in Orkney, which, as has been shown, has the very low mortality of 1 death out of every 42.
5. Three samples of peat from purely peat-burning districts in Orkney where cancer accounted for 1 death in 8 to 11 from all other causes.

The result of Dr. Drinkwater's analysis of these peats is very striking, and is as follows:—

	Total Sulphur Per Cent.
Where cancer is practically unknown—	
Glenferness Moss, Nairnshire	0·101
Moss Side Moss, Nairnshire	0·189
West Coast of Ross-shire	0·120
Where it is rare—	
Nistaben, Orkney	0·237
North Verge of Ardclach, Nairnshire	0·238
Where it is very common—	
Sebay, Orkney	0·890
Red Loam Peat, Orkney	0·676
Tankerness, Orkney	0·750

The surprising result is shown, therefore, that although peat fuel is generally understood to contain practically no sulphur, some peat from the cancer districts in Orkney actually shows nearly 1 per cent. of sulphur, or in excess of the amount which is contained in many coals.

As I have said, I am convinced that the fuel question is most intimately associated with the etiology of malignant disease, and that its bearing upon the problem is entirely dependent upon the quantity of sulphur which the various kinds of fuel contain. In other words it is not the combustion of the fuel but the combustion of the sulphur contained in it which seems to me to affect the question. Sulphur cannot be burned without the production of SO_2, and it is some compound of sulphur dioxide which to my mind has a great and powerful influence in exciting the

condition, or in producing the parasite or its enzyme, whichever it may be, which causes it.

What this exact sulphur compound is and how it may act cannot be discussed here. I can only reiterate what I have said before, that the tumours which devastate root plants have been shown by scientific agriculturists to be due to artificial manures which have been dissolved in sulphuric acid and contain sulphur.

No one who carefully studies the experiments of Professor Jamieson, of Aberdeen, on this point can have any doubt as to the fact that vitriolated manures encourage the growth of these tumours on the cruciferæ. They seem to act by stimulating the growth of an amœboid parasite, but whether this be the case or not their potent influence is unquestionable.

REPORTS OF SOCIETIES.

Edinburgh Medico-Chirurgical Society.

A MEETING was held on 2nd July 1913, Mr. J. M. Cotterill, President, in the chair.

Dr. Sym and Mr. Scot Skirving showed a girl, aged 24, after excision of an *orbital tumour*. There had been slight defect of vision for seven years, and some proptosis for five years. The proptosis was in the axis of the orbit showing that the tumour was not attached to its wall; and movements were not interfered with, showing that it was within the cone of the muscles. The absence of a thrill or bruit favoured the diagnosis of a neoplasm rather than a vascular lesion. There was no neuritis, showing that the nerve was not involved. There was some œdema. Krönlein's operation was performed, but the skin incision was made concave forwards instead of backwards. The tumour was a fibro-sarcoma of low malignancy, and the result was satisfactory.

Mr. Scot Skirving showed a case of *tuberculosis of the left humerus and scapula* treated by ileo-sigmoidostomy. The patient was a girl, aged 9. The joint had been affected for three years, and numerous local operations had been performed. There was slight intestinal delay, as shown by X-rays. After the ileo-sigmoidostomy there had been improvement up to a certain point for about a month. Although the patient's health remained better, no further local improvement had followed.

Dr. G. D. Mathewson read a paper on "*Conduction Defects in the Heart*," which will appear in the *Journal*. The defects of conduction indicated not merely an affection of the auriculo-ventricular bundle, but were part of a widespread myocardial change. In cases of complete heart-block the ventricles might beat independently of the auricles. Their usual rate was about 30. It might be simple to diagnose complete heart-block by noting the rate of the apex-beat and the rate of the jugular pulsations in the neck. Vagus action might accentuate the effect of organic heart-block, but the latter was not affected by atropine. Digitalis, strophanthus, and squill depressed conductivity, and

were therefore contra-indicated in heart-block. Electrograms illustrating different degrees of the condition were thrown upon the screen.

Dr. Russell said that there had been no more wonderful development in methods in medicine than the electro-cardiograph. He was impressed with the ingenuity and skill which enabled these methods to be carried out, but there might be a tendency on the part of those actually doing the work to overvalue the significance or importance of the results. The string galvanometer supplemented and did not displace the older methods. It confirmed the idea that many patients had myocarditis, but extensive myocarditis might exist without affection of the conducting bundles.

Dr. W. T. Ritchie said that it was only since the introduction of the string galvanometer that such conditions as auricular fibrillation had been recognised, and the paroxysmal tachycardias had been distinguished from each other. It also gave information regarding the tone of the heart, and was an important means of diagnosis of focal lesions.

Dr. Gulland said that a great deal which could be elicited in other ways was confirmed by the electro-cardiograph. Reliance on the older methods was necessary, since the apparatus was not generally available.

A discussion on *intestinal toxæmia* was opened by Dr. William Russell, who pointed out that in this question two factors had to be considered—the individual or personal, and the extraneous factor, the latter comprehending the substances dealt with. Under the individual factor the great subtlety of the chemical dynamics of the body, within average limits, and personal idiosyncrasy to various articles of food, had to be borne in mind. Numerous instances to toxic symptoms caused by dietetic substances in everyday use were quoted in illustration of this. From this it arose that the second, or food, factor was so closely related to the first, that it cannot be dealt with separately from the clinical point of view. The broad problem before the clinician is based on the fact of the prevalence of constipation, or colon stasis. The problem resolves itself into (1) the effect of constipation upon secondary digestion, including in this the excretory side of the process, and the retention of the waste products of cell metabolism; (2) the absorption of bacterial toxins, and the effects produced thereby; and (3) the reflex effects of constipation in the vascular system—a matter which is too often ignored.

Mr. Alexis Thomson said that surgeons were not yet able to express an opinion based on experience as to the best method of operation for colon stasis. The choice ranged from a simple appendicostomy, through various forms of short circuiting or entero-anastomosis, to resection of a part, or the whole, of the large intestine. The choice will ultimately be influenced mainly by the comparative safety of the operation and by its efficacy in restoring the function of the bowel.

The President agreed that appendicostomy sometimes gave good results: major proceedings must be approached with caution.

Dr. Chalmers Watson dwelt on the importance of a study of the stools in cases of chronic constipation, and urged that although at present little was known from the bacteriological point of view, examination of the flora of the bowel might lead to progress being made. Rheumatic symptoms were often due, he believed, to intestinal stasis.

Dr. Michael Dewar thought that colon stasis might be prevented if people were educated to the necessity of regular evacuation of the bowels.

Dr. Price, speaking as a radiographer, believed that in most cases of colon

stasis surgery offered the sole hope of relief. By X-rays the amount of atony and the exact part of the colon involved could be shown, and the surgeon should remove this. Lane's operation would, he thought, become more frequent.

Dr. Gulland thought that the difficulty of diagnosis and treatment had been exaggerated. Absorption of toxins from the bowel could be recognised by an examination of the urine. The condition of the teeth should also be inquired into.

Mr. Scott Carmichael described a case of abnormally long pelvic colon in a child aged 2½ in whom he had performed Lane's operation with benefit. The constipation was cured, and the general nutrition greatly improved.

Dr. Brock believed that in the large majority of cases neurasthenia preceded, and did not result from, constipation. He admitted, however, that a vicious circle might be set up.

In his reply Dr. Russell pointed out that the cases seen by Dr. Price were all advanced cases; there was no doubt that early cases were remediable without surgical interference.

Edinburgh Obstetrical Society.

A MEETING was held on 9th July, Dr. Haig Ferguson, President, in the chair.

Dr. M'Gibbon read a paper on "*Fatal Cases of Jaundice in the New-born Child, with Notes of a Case in Successive Pregnancies.*" The more usual forms of icterus neonatorum were referred to, but the paper specially dealt with a form of jaundice which is generally fatal and which is associated with somewhat extraordinary changes in the blood, the essential features of which are a great reduction in the number of red cells in the blood, and the presence of large numbers of normoblasts and megaloblasts. The disease has been described under various names, such as hereditary icterus and congenital familial jaundice. The majority of cases die within a week; some live a few weeks, and occasionally an infant whose blood has shown all the characters of this disease recovers completely. Many infants who have died with jaundice before modern methods of blood examination came into vogue were probably true examples of this disease. Isolated cases have been reported, but the majority have been members of the same family. Such have been described by Cruden-Arkwright, Ashby and Wright, Bushfield, and others. Dr. M'Gibbon then gave short details of a series of cases which had come under his own observation. The mother has had six pregnancies, all of which went to full term, except one which terminated at the eighth month.

The First Pregnancy.—A male child, born September 1902, with no jaundice, and never showing any trace of such; now a healthy strong boy of 10 years. *The Second Pregnancy.*—A male child, born October 1904, with jaundice, but recovered, and is now a strong, healthy, well-developed boy of 8 years. At birth the entire body was of a pale lemon tint, which deepened next day. Spleen much enlarged. A blood-count and blood-films showed the features characteristic of the disease. *The Third Pregnancy.*—A female child, born April 1906, full time and well developed. Jaundice well marked at birth, becoming rapidly profound. Spleen enlarged: urine bile stained. Was in a very drowsy condition, and died on the 5th day. Many blood-films taken which showed the same features. *The Fourth Pregnancy.*—A female child, born

July 1907, full time and well nourished. Jaundice at birth slight but distinct. Spleen enlarged. Had an umbilical hæmorrhage, and died on 7th day. Blood-films showed the same changes. *The Fifth Pregnancy.*—A female child, but still-born in December 1909, at the 8th month. Jaundice well marked over the entire body. *The Sixth Pregnancy.*—The last which this woman has had, delivery taking place in January last. Child jaundiced; spleen enlarged. Died suddenly on the 3rd day. No umbilical hæmorrhage on this occasion.

The main changes in the morbid anatomy were as follows:—Small hæmorrhages under the peritoneum and in the lungs. The liver showed a great increase in the size of the islands where blood-formation was in progress. In two cases there was an increase of the connective tissue, and in one there was distinct blockage of the common bile duct at its entrance into the duodenum. The thymus and lymph glands showed active proliferative changes. The thyroid showed an increase in fibrous tissue, and Buchan and Comrie found an entire absence of colloid material. The kidneys showed some cloudy swelling only. The suprarenals were enlarged, and also the seat of cloudy swelling. The pathology of this form of jaundice is as yet obscure. Various views have been suggested. The toxic theory is difficult to accept, because one would expect to find more pronounced changes in the kidneys. In the series of pregnancies which came under the writer's observation the mother was particularly free from any symptoms suggestive of anything toxic. The influence of syphilis has been much discussed. So far as the series under consideration is concerned, there is not the slightest evidence of any taint, nor is is there anything in the obstetric history of any of the recorded cases suggesting syphilis. An examination of the mother's blood for the Wassermann test made at the Wassermann Institute recently brought the report "slightly positive." This, however, will require further investigation.

The most recent view appears to be that this type of jaundice is due to some undue fragility of the red cells whereby they become broken up by slight causes.

The diagnosis can only be made by blood-counts and blood-films, which will distinguish it from septic jaundice and that due to syphilitic cirrhosis or acute yellow atrophy.

The following points are established:—(1) That this disease tends to affect several members of one family. (2) That syphilis cannot be excluded as yet, but there is little to establish a connection. (3) The constant features are jaundice either at birth or appearing rapidly within 24 hours, an enlarged spleen, and a profound anæmia.

Dr. Haultain read "*Notes on Some Cases of Eclampsia Treated by Veratrone*," which will appear in the *Journal*.

Mr. Scott Carmichael read a paper on "*Two Tumours Complicating Pregnancy.*" In the first case, a primipara, aged 42, a fibroid the size of an apple was removed from the uterine fundus at the fifth month of pregnancy because of acute pain associated with it. It was attached by a small neck. The abdominal wound enabled the recognition and location of another larger fibroid situated in the lower uterine segment and cervix, and of such a size that normal delivery was manifestly impossible. Pregnancy was allowed to continue till full term, when Cæsarean section was carried out and twins were delivered. A supravaginal hysterectomy was carried out at the same time. The twins weighed respectively 5 and 4½ lbs. The patient, as also the children, did well. In the second case the abdomen was opened at the sixth

month of pregnancy because of symptoms of intestinal obstruction. For two days there had been severe spasmodic abdominal pain and gradually-increasing distension. There had been a similar attack one month previously. On examination of the abdomen there was marked distension, with tympanitis all over, and considerable tenderness towards the left lumbar and iliac regions. There had been no passage of flatus for 24 hours. There had been a feeling of sickness, but vomiting only once. Rectal examination revealed nothing. Obstruction of the colon low down was diagnosed, probably volvulus of the pelvic colon. A high enema was given without benefit. After the abdomen was opened, greatly distended large bowel of a dark purple colour presented, resembling the bowel in a strangulated hernia on the point of gangrene. The intestine, on being punctured with a trocar and cannula, collapsed. It proved to be a loop of pelvic colon, which was encircled at its base by the long pedicle of an ovarian cyst, which was twisted on itself one and a half times. The pedicle and cyst were removed, and, as the bowel was already beginning to regain its normal appearance, nothing further was done. Recovery was complete, but on the sixth day profuse haemorrhage from the vagina set in. On examination a marginal placenta prævia was recognised. The foetus was turned and delivered. It lived only 8 hours.

RECENT ADVANCES IN MEDICAL SCIENCE.

MEDICINE.

UNDER THE CHARGE OF

W. T. RITCHIE, M.D., EDWIN MATTHEW, M.D., AND J. D. COMRIE, M.D.

Renal Function and its Bearing on the Classification, Diagnosis, and Prognosis of Diseases of the Kidney.

Our present views of diseases of the kidneys are still based on the writings of Bright and his contemporaries, but investigations are being pushed forward which have for their object a better classification of nephritis based on more precise knowledge of kidney function. A large amount of both experimental and clinical work has lately been done which more closely correlates clinical and pathological findings.

The following articles indicate the more important advances in the study of nephritis:—(1) "Studies of Renal Function in Renal, Cardio-renal, and Cardiac Diseases" (Rowntree and Fitz, *Archives of Internal Medicine*, March 1913). (2) "The Effects of Experimental Chronic Passive Congestion on Renal Function" (Rowntree, Fitz, and Gerachty, *ibid.*, February 1913). (3) "Phenolsulphonephthalein as a Test of Renal Function" (Cabot and Young, *Massachusetts General Hosp. Publications*, January 1913). (4) "Glomerular Lesions in Experimental Nephritis in the Rabbit" (Christian and Young, *Journ. Med. Research*, May 1913). (5) "Method of Classification, Diagnosis, and Therapy of

Kidney Disorders Based on Functional Testing" (Baright, *Med. Record*, N. Y., April 1913). (6) Discussion on "The Study of Renal Function" at Ninth Triennial Session of American Physicians and Surgeons (*American Practitioner*, May 1913).

All are now agreed that for a more scientific knowledge and diagnosis of kidney troubles the study of renal function is absolutely necessary. This can be carried out by various tests which give valuable and varying information.

According to Rowntree and Fitz these tests help—(1) To estimate total renal function: (2) to determine the absolute and relative value of the various tests in the diagnosis and prognosis of renal disease: (3) in cardiorenal disease with varying degrees of chronic passive congestion and nephritis, to determine more accurately which factor is of greater importance in the causation of the clinical picture encountered: (4) to diagnose the presence or absence of impairment of renal function in cases in which clinically nephritis is suggested; (5) to determine whether it is justifiable to draw conclusions relative to the involvement of the vascular or tubular functions under pathological conditions.

According to Baright the modern view of the normal functioning of the kidney may be expressed as follows:—First, chiefly in the glomerulus, by a simple process of filtration, dependent, therefore, upon blood-pressure and upon the chemical composition of the blood, the urinary water and crystalloids are separated from the blood serum. Second, in its further course, chiefly in the tubule, this primary urine is concentrated by water re-absorption, and at the same time enriched by the addition of certain organic and inorganic constituents. Some of these constituents are separated from the blood by osmotic action, while in other cases there is a true synthetic, therefore glandular, action. We must therefore distinguish three kidney processes—simple filtration, osmosis, and synthesis or secretion.

Our knowledge as to these functions and the several parts of the kidney involved has been brought about by so-called functional testings with certain substances.

Their times of elimination in normal animals and human beings have been ascertained, and the times of elimination are then determined in nephritic animals of various types, and in human beings the subject of nephritis in its various stages.

The substances used for testing the functions of the kidney are phenolsuphonephthalein, lactose, salt, water, potassium iodide, and the accumulation in the blood of uncoagulable nitrogen.

1. *Phenolsulphonephthalein.*—This is a drug eliminated almost entirely by the kidney. In health, following the intra-muscular injection of 0·006 grm., 50 to 60 per cent. is recovered in the urine in 1 hour, and from 60 to 80 per cent. in 2 hours. In a large series of acute and chronic

parenchymatous nephritis and chronic intestinal nephritis and uræmia it was found by Rowntree and Geraghty that where there was a marked decrease in output, marked renal changes were present, and when the drug was continuously excreted in traces, or not at all, a grave prognosis was to be given, even without signs of uræmia.

The test is of value in determining the degree of destruction of renal substance, and by it we obtain the most reliable information as to renal efficiency, and it is of great value in differentiating functional incapacity due to nephritis from that due to chronic passive congestion.

2. *Lactose Test.*—Lactose is excreted by the kidneys following subcutaneous or intravenous injection, and is excreted by the glomeruli, and therefore the time required for its elimination has been used as a means of determining the vascular functional capacity in various forms of clinical nephritis.

The mechanism of its excretion differs essentially, according to Rowntree and Fitz, from that of phenolsulphonephthalein, and they agree with Schlayer that its excretion is an index to the condition of the vascular function of the kidney.

The normal excretion time of 2 grms. lactose in 20 c.c. water is from 4 to 6 hours. By collecting the urine from hour to hour the length of time of excretion in health and in nephritis can be obtained, and polymetric readings give the total amounts of sugar regained.

3. *Salt and Water Tests.*—Salt taken in amounts in excess of that taken with the food is excreted by the tubules

Normally large amounts of salt are excreted by one of two methods. If the salt is given without extra water it is almost entirely excreted within 24 hours, without diuresis, by increased concentration in the urine; if given with an excess of water it is excreted, partially through increased concentration in the urine, and partially through diuresis.

In severe tubular destruction in the kidneys a urine of fixed low specific gravity is obtained, the quantity of which is not materially affected by the administration of salt, and the salt content of which is not augmented by administration of extra amounts of chlorides, because of the inability of the tubules to excrete it.

4. *Potassium Iodide Test.*—This is the oldest test, and was first used by Duckworth in 1867. When potassium iodide is given internally it appears in the urine in a few minutes, and the time required for complete elimination is also quick. The elimination of 0·5 grm. by the mouth in 60 hours may be considered a healthy standard. Potassium iodide is eliminated by the tubules, and its use is a method of determining tubular functional capacity.

5. *Test by Determination of the Incoagulable Nitrogen of the Blood.*—The accumulation of nitrogen in the blood is always a result of renal insufficiency. Cases of uræmia show a much higher serum incoagulable nitrogen content than do normal individuals or cases of nephritis without

uræmia. The demonstration of the presence of excessive amounts of nitrogen in serum affords an index of renal functional capacity, and thus is of great value prognostically. Rowntree and Fitz quote Widal as believing that it is generally possible to have, on the degree of urea retention an approximate prognosis as to length of life, since patients persistently, with more than 2 grms. of urea per litre of blood, can usually live for only months or weeks.

Information Derived from these Tests.

I. *Diagnosis.*—Christian of Boston, in his paper "On the Study of Renal Function," states that in the diagnosis of pathologic lesions of the kidney functional tests might be expected to yield information on two points: first, Were the kidneys diseased? second, What type of pathologic lesion did they show? By the various functional tests much aid is got in determining clinically whether the kidneys are diseased, but not so much in determining the type of lesion in the kidney. But as in all forms of clinical diagnosis not a single test but many yield the data on which diagnosis must be based, by employing these new tests systematically and methodically, and taking the results along with other clinical facts, we now could with greater certainty approach a diagnosis as to the type of lesion in the many diseases of the kidney.

Baright, in his paper in the *Medical Record*, goes further, and attempts by the application of these tests a classification of nephritis and a differentiation of the various types of kidney lesions. He recognises—

(a) *Nephritis with Delayed Lactose Excretion.*—This type is found pure—that is, with normal iodide and normal urea excretion—in 40 to 50 per cent. of all cases of nephritis. It is characterised pathologically by an endarteritis not only of the glomerular vessels of the kidney but also of the entire vascular system of the body. Because of this generalised affection of the arteries, and because in time sclerotic changes in the intima follow, with high blood-pressure and hypertrophied left ventricle, this type of nephritis has been called vascular nephritis. Here we are dealing not with a local but with a general condition.

As examples he cites angina pectoris, angina abdominis, intermittent claudication, transient aphasia, paresis, where, with no other sign of renal involvement, positive results will be obtained with the lactose test. This test is extremely valuable in these and other allied conditions, because it gives very early certain indications of involvement of the kidneys.

These patients have usually a sense of well-being, and come to the physician not for renal but for cardiac troubles. They are often people who have hard physical work. They are subject to hæmorrhages in the kidneys, in the retina, brain, and stomach. According to our present nomenclature these cases are found to have small white kidneys. The symptoms—the claudication, hemicrania, transient

paresis, etc.—have been considered uræmic, and treated as such by the withdrawal of meat and the administration of milk. But in these cases of pure vascular nephritis the nitrogenous elements are perfectly excreted—as can be determined by the nitrogen test—and there is no reason for the withdrawal of meat from the dietary.

(b) *Nephritis with Delayed Iodide and Chloride Excretion.*—Here the tubules of the kidney are involved. This type is seen pure in only from 5 to 7 per cent. of all cases. The excretion of lactose and urea are normal, while potassium iodide and salt are delayed.

Clinically there is œdema, much albumen, and many formed elements. Even when such cases have been chronic for a long time, hypertension and cardiac hypertrophy are never prominent features. Uræmia does not follow, and death results from the œdemas. The œdema of heart-failure is to be distinguished from that of tubular nephritis. The former appears in the dependent parts, and is accompanied by cyanosis, dyspnœa, cold extremities, ascites, hydropericardium, etc. The œdema of tubular nephritis does not appear in the dependent parts, but in the loose connective tissue, especially in the eyelids, in the scrotum and penis, in the dorsum pedis, and under the tendo Achillis. There is no cyanosis and no dyspnœa, and the hands are warm and pale.

(c) *Nephritis with Urea Retention.*—This type is rarely seen in a pure form. It is a toxæmia due to the presence of nitrogenous products in the blood which should be excreted in the urine. Normally and in nephritis without uræmia not more than 30 mg. of this kind of nitrogen is found in 100 c.c. of blood serum. In uræmics the nitrogenous products increase to 100, 200, or even 300 mg. Because such patients cannot or dare not take meat and other nitrogen-containing foods they soon suffer from deterioration of the muscles, and it is in such cases that we find the true albuminuric retinitis, which should not be confused with the retinal hæmorrhages of vascular nephritis.

(d) *Mixed Types.*—As has been indicated, pure types are rarely seen except in vascular nephritis. An acute beginning nephritis is usually a mixture of types 1, 2, and 3, with milk-sugar retention, strong potassium iodide and urea retention, some increase in blood-pressure and hæmaturia characteristic of acute glomerular irritation, oliguria and œdema due to tubular injury, and uræmic troubles due to accumulation of nitrogenous waste in the blood. This mixed acute nephritis may heal or become a chronic vascular, tubular, or uræmic type. According to Bright the acute nephritis caused by exposure usually becomes tubular or uræmic, while the infectious forms more often pass over to the chronic vascular type.

Bright claims, in conclusion, that by employing the functional tests one is adopting a method in the interest of earlier detection, more exact diagnosis, and a more rational, efficient therapy.

II. *Prognosis.*—Dr. Rowntree, in the discussion at the American Congress, made special reference to "the prognostic value of studies of renal function." He pointed out that a clinical diagnosis having been made, certain problems had to be investigated before offering a prognosis:—

(*a*) What pathological condition underlay the clinical picture? (*b*) Was the condition confined to the kidney, or was any other system, as the cardiovascular, involved? (*c*) What was the functional capacity of the kidney? Was this temporary or permanent? (*d*) Was the condition amenable to treatment?

Functional studies, he said, revealed only the excretory capacity of the kidney, but did not make the diagnosis nor settle the prognosis. But still they should be used as a matter of routine along with other procedures. The phthalein test is of great prognostic value, and for general use is of more value prognostically than any other single test. The suppression of the excretion of lactose is also of considerable prognostic value.

The potassium iodide test is of little prognostic value, while the marked accumulation in the blood of incoagulable nitrogen is of considerable prognostic value.

However, a study of the combination of these tests is needed in order to determine the extent of parallelism in their findings.

III. *The Bearing of Functional Testing on Treatment.*—Janeway of New York, in the discussion at the American Congress of Physicians, reported in the *American Practitioner*, said that in chronic diseases diagnostic skill usually ran ahead of remedial measures, and in no conditions was this more apparent than in diseases of the kidney.

The treatment of renal disease had made progress along two lines: (1) The study of experimental nephritis in animals had made clear the existence of isolated disturbances in the excretion of individual constituents of the urine and the existence of definite types of abnormal reactions of the diseased kidneys to stimuli. These had been found to have counterparts in human nephritis. (2) The accurate study of the salt and water exchanges in human nephritis and their relation to œdema had resulted in a precise and scientific method of treatment which was highly effective in certain types of renal disease. Water tests were most important guides to treatment, especially in the convalescent stage, of acute nephritis.

Therapeutic means of combating nitrogen retention were as yet unknown. The phthalein test did not and could not be used in any way as a guide to treatment, though it might form a means of measuring improvement in chronic passive congestion of the kidney. The treatment of œdema was much more certain. In the salt-poor diet we had the most effective measure for treatment in the œdematous types of nephritis.

The one essential guide to treatment was the absolute salt balance. By the exact estimation of salt tolerance and the adjustment of intake at a point below the ability of the kidney to excrete salt, chronic cases might be kept free from œdema over long periods of time.

E. M.

SURGERY.

UNDER THE CHARGE OF

J. W. STRUTHERS, F.R.C.S., AND D. P. D. WILKIE, F.R.C.S.

Arthroplasty.

In the *Annals of Surgery* for May 1913 J. B. Murphy recounts his technique and the results he has obtained in doing arthroplasty. He has done 62 arthroplasties for bony ankylosis: 16 in the hip, 28 in the knee, 12 in the elbow, 3 in the jaw, and 1 each in the toe, shoulder, and wrist. As the result of his experience he maintains that perfectly movable, normally functionating joints with sliding and rotary motion of the normal type can be, and have been, reproduced; that a new synovialoid membrane is produced with fluid not synovia but resembling synovial fluid, and lining cells identical with those lining hygromata, and closely resembling the endothelial cells of normal synovial membrane: that these joints support full weight and traction; and that they are painless once the process of repair is complete. In addition he states that the new joints are not subject to the hæmatogenous metastatic inflammations of normal joints, and that the production of new joints is not difficult technically, and is not associated with great danger to life. The plan of operation followed in dealing with each joint is fully described, but space will not allow of more than a summary of the general principles to be followed. The ankylosed bones must be separated along the line of junction, and their normal contour reproduced as accurately as possible. A pedicled flap of fat and fascia, lifted from the neighbourhood of the joint if possible, otherwise a flap taken from the fascia lata of the thigh, is then interposed so as to cover completely the ends of the bones, and is fixed in position. Muscular and tendinous attachments are then restored accurately, and the wound closed without drainage. Early passive movements beginning about the end of the first week after operation are employed. Excellent results appear to have been obtained in some cases of hip, knee, and elbow ankylosis, but it should be noted that the knee, for obvious reasons, is the most difficult joint in which to get a really good result, giving free movement with stability. One death is recorded in the 62 cases. It followed arthroplasty of the hip in a patient addicted to morphia, who tore off his dressings and infected his wound soon after the operation. The fatal result was due to the infection. It is to be

noted that slight infection, which occurred occasionally in hæmatomas, did not apparently prevent good ultimate results being obtained.

Gangrene among Troops on Active Service.

Wieting, who first practised arterio-venous anastomosis as a prophylactic in cases of threatened gangrene, describes a form of gangrene which he met with very frequently among the troops on active service in the recent Turkish War (*Zentr. f. Chir.*, No. 16, 1913). The condition was met with in troops exposed in wet trenches or on sentry duty to temperatures which, although low, never reached the freezing-point, and was especially frequent in those who were badly nourished or who suffered from dysentery or cholera. While the condition usually appeared about two days after exposure, it was not infrequently found in men who were healthy at the time of exposure, but who subsequently developed dysentery or cholera and showed signs of gangrene as long as six or ten days after being chilled. The first symptoms were itching or smarting in the toes and feet, followed by redness with swelling and œdema, the affected parts finally taking on a blue colour, with the formation of blisters containing serous fluid. In cases with wounds the phenomena of infection were added. A characteristic feature of the gangrene was its slow progress.

The sequence of events seemed to be a vasomotor paresis due to prolonged chilling, followed by stasis and thrombosis. In many cases the extent of the gangrene was limited to the tips of the toes, and the main indication in treatment is to delay operative measures until the extent of the gangrene is quite clearly shown by the formation of a line of demarcation, when plastic operations immediately above the affected parts should be carried out. While waiting for the demarcation line to form, treatment should be carried out on ordinary lines, with elevation of the limb and dry aseptic dressings.

The Cause of Pain in Pyelography.

In answer to the question, "Are the present methods for the injection of the renal pelvis a source of danger?" Tennant (*Ann. of Surg.*, June 1913) reports an instructive case in which the usual plan of injecting the renal pelvis with a 15 per cent. suspension of collargol from a piston syringe was followed by serious consequences. Twenty c.c. were injected into the right kidney pelvis, 16 c.c. into the left, the signal for stopping the injection being the feeling of colicky pain by the patient. The X-ray picture of the injected pelvis was unsatisfactory, and some weeks later the process was repeated, a 25 per cent. suspension being used on the second occasion, in smaller amount than at the first sitting. The X-ray of the second injection showed a peculiar shadow extending into the kidney, and at the exploratory operation

it was found that the collargol injection, presumably the first one, had caused a wedge-shaped infarct of the kidney about two inches wide. This was resected, and on microscopic examination showed tubules entirely filled with collargol, with necrotic cells and inflammatory exudate round about. The collargol had, in short, practically destroyed a large area of the kidney. Following this experience, Tennant experimented on freshly removed pigs' kidneys. It was found that the collargol injections readily travelled into the kidney substance when injected into the ureter at a pressure of 40-80 mm. of mercury, and, further, that the pressure exerted in filling a kidney pelvis through an average-sized ureteral catheter averaged 60 mm. of mercury. In other words, the practice of distending the kidney pelvis by using a suspension of collargol delivered from a piston syringe is one attended by a very obvious danger. Tennant recommends that a syringe with a manometer attached should be used for uretero-pelvic injections, but does not state what actual pressure may safely be used.

Cysts of the Spleen.

Owing to their comparative rarity cysts of the spleen have been little studied, and our knowledge of them is limited. Fowler (*Ann. of Surg.*, May 1913), in addition to reporting a case in his own service, has analysed the available records and collected over 70 cases. He suggests a primary separation of splenic cysts into dermoid, parasitic, and non-parasitic cysts. The non-parasitic cysts are the most interesting because of the uncertainty regarding their origin, and Fowler's work has been confined to their study. He recognises six varieties: traumatic cysts: infoliation cysts ascribed to inclusion of peritoneum after injury: dilatation cysts of splenic sinuses: disintegration cysts following infarction and necrosis: neoplastic cysts, hæmangioma and lymphangioma: and degeneration cysts arising from secondary changes in new growths. This classification is admittedly provisional and imperfect. The cysts may be large and single or multiple and small. In the etiology of large cysts the most generally acknowledged factor is trauma, which gives rise to single cysts with hæmorrhagic or serous contents, and was noted as preceding the cyst formation in 17 cases. Apart from malaria and syphilis no relation could be shown between diseases giving rise to splenic enlargement and a tendency to cyst formation. The origin of multilocular cystic disease is wholly obscure, and Fowler's observations have thrown no light on the matter. Clinically the most frequently recognised variety is the large cyst which gives rise to a palpable tumour, with or without pain. Accurate diagnosis is rarely made until the abdomen is opened. Splenectomy is the treatment of choice unless adhesions are so dense and complicated as to forbid it, in which case resort must be had to incision and

drainage. Abstracts of all the recorded cases are appended to the paper.

Splenectomy.

Giffin (*Amer. Journ. Med. Sci.*, June 1913), writing from the Mayo clinique in Rochester, reports the results of 27 cases of splenectomy. Eighteen of these were done in cases of splenic anæmia, the essential features of that condition being regarded as great splenic enlargement with a secondary anæmia, usually also a leucopenia. Twelve of the cases were in women, 6 in men, the average age being 37, the extremes 22 and 56. A noteworthy feature in the cases was the frequency with which the patients were troubled with pain. This was probably due to perisplenitis, and in some cases to infarction. In only 4 cases was there a previous history of malaria, and in 2 of these there appeared to have been a direct etiological relationship between the malaria and the splenic anæmia. None of the patients had had syphilis. Four splenectomies were done for splenic enlargement regarded as secondary to some infective process, which, however, could not be accurately defined, and the remaining 5 cases were classed as miscellaneous, including 2 cases of wandering spleen, one of tuberculosis, one with atypical anæmia, and one in association with cirrhosis of the liver. Of the 27 patients, 2 died as the immediate result of the operation, both suffering from splenic anæmia and gravely ill. The results in the splenic anæmia cases are the most instructive, and show that 12 of the 16 patients recovering from operation were in excellent health 6 months to 7 years after treatment, two were improved, one improved for a time but died 3 years later from hepatic cirrhosis, and one died $2\frac{1}{2}$ years after operation from an unknown cause. The record shows that splenectomy is apparently well tolerated, and is not followed by any characteristic or important blood changes.

The Transference of Organisms from the Skin by the Knife.

Steinegger (*Zentr. f. Chir.*, No. 26, 1913) has set himself to find out to what extent a knife used for making a skin incision may pick up organisms from the skin and transfer them to the deeper layers of a wound. He began his experiments by making incisions through the undisinfected skin of dead bodies, and then plunging the knife into culture media. All such experiments gave a positive result, a growth of organisms resulting in every case. In the next place he tested 4 cases in the living subject in which the skin had been prepared the night before for operation, but had not been finally disinfected on the operating-table. An incision was made through the skin only, and a culture then made from the knife blade. Three cases gave a growth, the fourth did not. The wounds made in these cases healed by first intention. Finally 347 observations were made on operation cases after the skin had been disinfected by various methods in common use.

In 72 of these a growth was obtained, and in the remaining 275 the result was negative. The number of cases was too small to allow any decision to be made as to the relative value of the different methods of disinfection used, but Steinegger claims that the general result clearly shows that a knife used for a skin incision should be regarded as a possible source of infection if used for the deeper layers of a wound. The organism most commonly found was the staphylococcus albus.

J. W. S.

DISEASES OF CHILDREN.

UNDER THE CHARGE OF

A. H. MELVILLE DUNLOP, M.D., AND A. DINGWALL FORDYCE, M.D.

The Binet-Simon Tests.

In order to ascertain the mental level of the child, and to discriminate between the child who is educationally backward but of normal intelligence, and the child whose intelligence is below the normal, the tests recommended by Binet and Simon have been used in Summerton School for mentally defective children (Fraser, *School Hygiene*, May, 1913).

According to the Defective and Epileptic Children (Education) Act, those children are to be admitted to special classes "who, not being imbecile, and not merely dull and backward, are defective, that is to say, by reason of mental (or physical) defect are incapable of receiving proper benefit from the instruction in the ordinary public elementary schools, but are not incapable by reason of such defect of receiving benefit from instruction in special classes."

The difficulty is to decide which are these children.

Children who are making no progress in an ordinary school are not necessarily mentally defective; their backwardness may be due to a variety of causes, *e.g.*, physical defects (slight deafness, visual defects, presence of adenoids and enlarged tonsils), irregular attendance, want of sufficient sleep, too high a class, etc.

Any physical defect must be remedied before judgment is passed on the mental condition of the child.

Binet and Simon, experimenting with a large number of normal children attending the elementary schools in Paris, found that at certain ages the intelligence of the child had so developed that he could then perform certain acts and answer certain questions. As a result of these extensive experiments a table was drawn up for the determination of the intellectual level of the child according to certain specified age-periods.

In a number of cases it will be found that some of the tests cannot be applied at all. The value of the tests is greatest in determining the intellectual level in children apparently normal till sent to school.

These are the most important cases for admission to the special school, since some hope may be entertained of improvement under special instruction. It is advisable to begin with the tests for an age lower than that of the child, because if too difficult a question is set or asked the child becomes frightened and no further response can be elicited.

A consideration of some of the more important tests and of the results arrived at when applied to defective children in Summerton Special School is of interest.

Description of Pictures.—Various pictures are shown to the child, who is asked to tell what he sees. By means of this test Binet distinguishes three intellectual levels:—

1. At 3 years the normal child enumerates the objects seen, *e.g.* a man, a dog, a hat, a stick. This shows a simple perception and recognition of external objects.

2. Later (at 7 years), the character of the persons and the nature of the things are described and their connections noted. This indicates a power of description and association.

3. Still later the child interprets the picture and gives some evidence of his reasoning power.

In Summerton School no child under 9 years (with one exception of 7 years) described the pictures, that is to say, they were two or more years behind the normal child by this test. Of those over 9 who described the pictures, half described them accurately. Three children aged 10, 11, and 12 years respectively described and interpreted the pictures.

By these tests valuable information is obtained regarding the children's powers of perception, observation, and interpretation. Generally it is found that in these respects the defective children in schools are more than two years behind normal children.

Definition of Known Objects.—The objects to be defined are fork, horse, chair, mother. The child is asked, "What is a fork?" etc. This shows the child's power of expression, and elucidates the conception he has formed of an object, and the point of view which he considers to be the most important. Binet describes three classes of answers: (1) Silence, or mere repetition of the word; (2) definition of use (7 years); (3) definition superior to use (9 years).

Memory is tested in various ways.

The auditory memory is tested by reading the following passage to the child:—"Last night, in Glasgow, a fire destroyed three buildings in the centre of the town. Seventeen families are without homes. In saving a baby, a boy got his hands badly burnt."

In using this test Binet makes the normal child read the passage, but in dealing with defective children this is impossible, as they can rarely read. After reading it to the child he is asked what the passage is about. He is told beforehand to listen carefully, as he will have to

remember it. At eight years he should be able to remember two facts.

This test does not give satisfactory results in testing the mentally deficient, as it depends to a large extent on attention and concentration as well as on memory — powers in which the mentally defective child is notably deficient. Dr. Shrubsall considers it too hard even for mentally defectives who are leaving school. Three of the Summerton cases remembered two facts, aged 9, 11, and 12 respectively. One boy of 13 remembered the whole passage.

In many cases where the facts were not remembered something was invented to take their place. The normal child who does not remember says so or remains silent.

The immediate memory for unrelated auditory stimuli is tested by repeating numbers. This involves an effort of attention, as the isolated figures convey no meaning.

A normal child should repeat 3 numbers at 4 years, 5 numbers at 7 years, 7 numbers at 12 years.

Care must be taken that the figures used are the same in every case, otherwise the results are not comparable.

The immediate memory for intimately associated auditory stimuli is tested by repeating phrases. Normal children of 6 years old should be able to repeat a phrase of sixteen syllables.

Binet, comparing twelve defectives aged 9 years with twelve normal children of the same age, found the defectives very feeble in this respect. He found one or two exceptions, but on closer examination he thought the ability of those to repeat was an "echo," and that if an interval was allowed these also failed in the test.

Judgment of Length.—This is determined by means of a card on which are drawn two lines, one 5 cm. and the other 6 cm. long, placed 3 cm. apart. The card is shown to the child with the longer line placed to the right, to the left, above and below the shorter, and in each position the child is asked to point to the longest. Suggestibility is introduced by immediately afterwards showing two lines of exactly the same length.

The normal child of 4 should accomplish this test. Dr. Shrubsall says that mentally deficients pass this test. Binet considers that the response to the test shows little difference between the normal and the defective child. Whipple says: "Defectives are apt to answer fairly promptly, but repeated trials may show that they are not really comparing the lines."

The author compared the results obtained by this test with twenty children in an ordinary school and twenty children in a defective school, the ages ranging from 7 to 14 years. Of the twenty children in the ordinary school eighteen promptly pointed to the longer line. Only one, a boy aged 14 years, said that the lines of equal length were

the same. The other nineteen all pointed to one or other line as being the longer, but in each case after considerable hesitation. It seems probable that they considered the lines to be the same, but felt they were expected to find a difference. Of the twenty children in the defective school thirteen answered correctly as to the longest line, while every child pointed to one or other of the lines of equal length, and that without any hesitation.

The Comparison of Weights.—For this test four small boxes of the same size and shape, and weighing 45 grs., ʒi. ss., ʒiii., and ʒiv. respectively, are placed before the child, who is then asked to put the heaviest in a certain spot indicated, the next heaviest next, and so on. This is much more difficult than simply placing the different weights in the hand and asking which is the heaviest, for not only is an appreciation of the sense of weight required, but also the understanding that it is necessary to compare the weights in order to put them in proper order.

Binet finds that two weights can be compared at 5 years, while five weights can be arranged at 9 years.

In the mentally defective the sense of weight is often feeble, and it is impossible to get them to arrange the weights in the order required.

Comparison of Two Objects from Memory.—The objects compared are paper and cardboard, fly and butterfly, wood and glass.

At 8 years the normal child can compare objects, and does so readily. It is often difficult to make the mentally defective child understand what is wanted. He will say, for example, that wood and glass are not the same, but when asked what is different about them will say: "Wood's different," or "glass is different." He apparently knows the difference, but cannot express it.

Tracing Resemblance.—Tracing resemblance between two objects is still more difficult, and very few of the children succeeded in doing so. They frequently gave the contrast instead of the similarity.

The words used are snow and milk, fly and bee, table, chair, door. If a child responds to this test his deficiency may be doubted.

Framing Sentences.—Framing a sentence containing three given words is a more difficult test, and requires some inventive power. The words used are girl, river, ball.

The normal child can do this at 10 years.

Recognising Wants or Deficiencies in Figures.—Three faces are shown —one wanting eyes, one wanting nose, one wanting mouth, and a figure of a woman is shown without arms.

Here there is a marked difference between the normal and the abnormal child. The normal child recognises them promptly by 7 years.

The author has only seen one defective child (aged 12 years) recognise the wants at once without help.

Execution of Three Simultaneous Orders.—This shows response, and

Binet finds that the normal child carries out the three orders promptly by 6 years. Other observers find it done earlier by the normal child, while Binet puts it at 7 years in his 1911 series. Most defectives fail to carry out more than two commands.

Colour Sense.—The colour sense is tested both by naming and matching colours. At 8 years simple colours should be correctly named. Colour defect does not necessarily mean mental deficiency. The defective child can often match the colours though unable to name them.

Many of the other tests, such as giving the date, counting pennies, giving change, etc., involve a certain amount of instruction, and consequently are not so valuable as indicators of intelligence, though of use in determining how much the child has learned.

Questions of Comprehension.—The questions of comprehension are, however, very valuable as indicating the mental condition of the child.

Binet has arranged these in two series, one more difficult and presenting more difficulties in vocabulary. The first series are usually answered at 10 years by the normal child.

The defective child answers simple but fails with abstract questions, and the answers themselves give indications as to the child's tendencies, habits, and mental outlook.

The dependence of such children is shown by the frequency with which they say they would tell their mother: while their timidity is expressed by the number of times the questions are answered by the word "greet" (cry).

The results of systematic application of these tests to defective children by Decroly and Degard show—"That there is a very good general correspondence between the classification of the defectives on the basis of pedagogical, clinical, and general observation, and their classification on the basis of the test, so that the tests have a practical value for the psychological classification of defectives."

One objection lodged against the system is the length of time occupied in testing each child. Binet gives the time as forty minutes, but it is rarely possible to examine the defective child fully in less than an hour.

It may be reasonably asserted that the time occupied is a saving of time and a preventive of mistakes in the future, because if the tendencies and characteristics of the child are known on his entrance to the class, the scope and extent of his education will be determined.

A. D. F.

DERMATOLOGY.

UNDER THE CHARGE OF

W. ALLAN JAMIESON, M.D., AND R. CRANSTON LOW, M.B.

Unusual Exposure to Light Followed by Seborrhœic Keratosis.

Seborrhœic keratosis is a common cutaneous disease, which most frequently occurs in elderly people, and especially, as its name implies, in those who have a seborrhœic or unduly oily skin. Light, says Montgomery (*Journ. Amer. Med. Assoc.*, 4th January 1913), particularly the actinic rays, is held now to be often the exciting cause. It is true there is no direct evidence, but phenomena appear, difficult to account for otherwise. (1) Patches of seborrhœic dermatitis not rarely begin as small pigmented spots, and the formation of pigment is a well-recognised effect of the action of light. (2) These stains and patches manifest themselves almost exclusively on the exposed surfaces of the face, neck, and back of hand, and the lesions so produced are, as a whole, analogous to those of xeroderma pigmentosum, a disease in which light acts as the exciting cause. (3) The chronic dermatitis following prolonged exposure to X-rays, which are particularly actinic, presents the same set of symptoms as xeroderma pigmentosum and seborrhœic dermatitis, and eventuates as they do in epithelioma. Dubreuilh found that of 162 persons with seborrhœic dermatitis, 65 per cent. had outdoor occupations, while 37 per cent. were employed indoor. Snowburn, especially in the mountains and on glaciers, is much more severe than waterburn as from lakes, and waterburn, again, is severer than ordinary sunburn. Light at high altitudes is richer in actinic rays than light at lower levels, since these rays are filtered out in process of descent. Snow, again, absorbs the long waves at the red end of the spectrum, and refracts the short ones at and beyond the violet end. The blue tint often noticed in snow and ice is ascribed in part at least to the refraction of the rays at the violet end of the spectrum. Reflected rays from snow and water also impinge on the skin at an unusual angle, and thus take it, so to speak, by surprise. Nature protects the inhabitants of sunny climes by staining their skins yellow, red, and brown. In addition to what has been said, in temperate climates the beam of light passes through the cooled air over the water or snow, and thereby loses a great quantity of its long red heat waves, and the man exposed, not feeling the pain or discomfort of the heat, is not warned of the damage the short painless actinic waves are causing until the injury done is very great. In support of these views a case is cited where a naval officer, aged 56, complained of a number of seborrhœic keratosis, which he said had first appeared about ten years previously as brown discolorations.

These were situated principally along the lower jaw, in front of the ears, and on the auricle. Some of these were only roughened, while others were infiltrated and crusted, and these when curetted showed that the process had extended down into the cutis, having undergone epitheliomatous degeneration. His skin had given him no trouble until it chanced that he was employed on a Coast Survey, when for many hours each day he was out in a small boat plotting figures on a sheet of white paper stretched on a board. In course of his occupation, therefore, he was exposed to the direct rays of the sun, and also to those reflected from the water and from the white paper, so consequently he suffered much from sunburn. As regards treatment, in many instances a covering is all that is necessary. In the instance cited a red or yellow handkerchief tied down over the ears and under the chin would have almost entirely protected him from the up-streaming reflected rays, which we assume caused his trouble. A yellow veil and yellow spectacles would probably have defended his whole face. Paper used in such circumstances ought to be dark grey. When seborrhoic patches appear, Montgomery finds curetting and the subsequent application of trichloracetic acid most effective.

The Cause of Psoriasis.

Cunningham (*Med. Rec.*, 7th December 1912) commences an article on the subject thus—"Put your case of psoriasis to bed, give him hypodermics of arsenic, get him cleaned as quickly as possible, and collect your bill before he relapses"—a quotation from an address given to a post-graduate class by a very eminent dermatologist. The plain unvarnished truth is, we have been in utter ignorance of the cause of psoriasis and have been unable to proceed intelligently to control its manifestations. Antiparasitic remedies do not abolish it, while abstention from animal foods as recommended by Bulkley at best only retards its return. The symmetry of its distribution, the occurrence in many instances of the disease in robust hardy individuals, with no apparent vice of metabolism, seem to point to a central controlling agency, in other words to the nervous system. There are many conditions where the nervous system is admittedly at fault in the production of cutaneous disorders. Instead, therefore, of plastering the patient with repulsive ointments, Cunningham advises that we should devote our minds to discovering what is amiss with their nervous systems, and seek to put them in as normal a state as possible by whatever methods—medicinal, hygienic, climatic, and moral—we may be able to employ. In private practice this is not so difficult to carry out. He relates three cases where measures of this nature effected a cure. In one, in a woman of forty, there was too much responsibility, which worried her. A complete change to the country, where she lived a rough open-air life, with no thought as to diet or eruption, removed it in a couple of months.

In another, a young man with inveterate psoriasis, by an unexpected improvement in his circumstances, was enabled to take a trip to Europe, with no financial concern. He came back well. In a girl of twelve, in rather unhappy surroundings, removal from these, combined with the unrestrained life in the country, made her cheerful and hopeful, and in six months the psoriasis had vanished. The line he suggests is a careful study of the conditions of life in which the patient exists, so as to endeavour to correct any influences which might tend to depress their nerves.

Angio-Lupoid.

Under this name Brocq and Pautrier (*Ann. de dermat. et de syph.*, January 1913) describe a rare affection of the skin, of which they have seen, in recent years, six instances. The lesions are very uniform in aspect, in situation and evolution. It seems only to attack women and those about the age of forty. So far, no examples have been met with in men. The disease occurs in patches, and one is found situated on the side of the nose near the angle of the eye. Less often the tip of the nose may be attacked, or the cheeks on their inner and upper parts. The patches may be almost flat, or markedly raised, presenting a rounded or oval contour, with a well-defined margin. The colour is a purplish-red, sometimes mottled with yellow. When pressed, the erythema disappears, and the yellowish tint predominates. The epidermis is quite smooth and thinned, showing no trace of scale or cicatricial atrophy. A well-marked network of telangiectases shines through. To the touch an impression of a soft infiltration is imparted. There are but few patches, one or two as a rule, seldom four or five. These may attain a diameter of nearly an inch by half an inch at their smallest. They develop slowly, in course of months or years, show no tendency to spontaneous involution, and are very resistant to treatment. The ailment seems special in its nature. One may eliminate tuberculous lupus. The diffuse yellow-brown tint evoked by the pressure of the diascope is quite distinct from the barley-sugar hue of small isolated lupus tubercles, though the softness of the infiltration recalls that of lupus. In the same way lupus erythematosus can be excluded. There is neither desquamation nor cicatricial destruction, though the telangiectic network reminds one of erythematous lupus. Syphilis and leprosy can likewise be set aside. On the other hand, when the antecedents of the patients are studied, there can nearly always be discovered suspicious auscultation, or the presence somewhere of tubercle bacilli. The authors, therefore, would place the complaint in the group of atypical cutaneous tuberculoses. It has also analogies with the sarcoids of Boeck, in particular those with large nodules, but while there are resemblances there are also differences. Only one case could be examined pathologically. In general the tissues exhibited features of a tuberculous character like those met with in lupus tumidus non exedens. The infiltration consisted of epithelioid cells,

giant cells, and leucocytes, and was in all respects very closely allied to the histology of tuberculous lupus. But here again there were similarities to the sarcoids of Boeck. The authors failed to stain any bacilli in or near the giant-cells. A guinea-pig which was inoculated increased in weight, and showed no sign of tuberculosis in its organs when killed some months later.

On the Influence of Diet on Skin Diseases.

The teaching of Hebra that the majority of skin diseases are specific affections of the integument, and, as such, require external management to the neglect of internal regulation still holds its ground in Austro-Germany. The French, British, and American dermatologists, on the contrary, incline to the view that many, if not the most, of these disorders are rather the expression of an inner dyscrasia, and therefore demand dietetic adjustment. Hubner (*Med. Klinik*, 16th March 1913) thinks that the differences of view can be bridged over, and by judicious selection of aliment a variety of skin diseases can be favourably influenced, though it might be too much to say that they can be cured by such methods alone. Such instances as that of itching in jaundice, or furunculosis in diabetes are not included, but rather the changes in the actual disease of the skin by diet. The dermatoses of infants are to be judged of differently from those of adults. Thus the digestive canal of young children is much more permeable to the tubercle bacillus than is that of older ones, or of grown-up persons. Similarly the intestinal mucous membrane of suckling infants absorbs fermentation products more readily than that of older persons. We should therefore avoid over-burdening the bowel so as to obviate the formation and absorption of abnormal results of decomposition. Eczema, particularly of the seborrhoeic type, is specially common in over-fed, obese children. In such cases Feer limits the quantity of milk ingested materially, and completely withholds it in the second half-year, replacing it with groat or meal gruel. Fruit juices and cooked vegetables are well borne quite early in life, and help to regulate the bowels. The cream in milk is an element to be avoided, and whey or buttermilk given in place of pure milk. According to his experience, eggs are ill borne by children with eczema. Less securely based is the teaching of Finkelstein that the damage arises from the salts contained in milk. That the hygroscopic properties of chloride of sodium, when deposited too freely in the tissues of children with an exudative diathesis, originate œdema of the skin and weeping eruptions. Still external remedial measures cannot be dispensed with, else how otherwise can we combat the itching, or obtain absorption in the inflammatory areas, than by outward treatment. The fear of curing an eczema, as this may "drive some poison in," is unfounded, and Veiel maintains is wholly groundless. When we leave the age of infancy, whose welfare depends so closely on the proper action of the bowels,

we notice that the influence of food on skin diseases rapidly diminishes. Still there are certain ailments of the child and of the developmental periods where improper feeding is causative. Strophulus infantum or lichen urticatus is an example. Here reduction in the quantity of the food, regulation of the bowels by administering preserved fruits or mild laxatives, often the mere addition of vegetables to a too exclusively meat diet, will prove sufficient to procure normal evacuations. To prevent abnormal decomposition in the intestines use may be made of menthol or carbolic acid in pills. One must bear in mind the modern teaching as regards anaphylaxis in estimating the connection of the hypersensitiveness of the skin to certain articles of diet, so as to eliminate such from the nutriment. In acne, again, it has been found that those fats with a low melting point should be avoided. Jessner has seen cases of pruritus ani which vanished with the disuse of tea and coffee, which possess general nerve-stimulating constituents.

Eczema Marginatum of Von Hebra.

The true nature of this affection has been much disputed. Some have regarded it as a hybrid of ringworm and eczema, others as autonomous, due to a special fungus. Alexander and Sabouraud have particularly studied it of recent years, and the latter holds it to be a specific parasitic disease, related closely to those caused by the trichophytons, though distinct from such. He has named the parasite epidermophyton inguinale, and described a new type occurring in the interdigital spaces of the hands and feet. Nicolau (*Ann. de dermat. et de syph.*, February 1913) has met with 35 examples, mostly sporadic. The youngest was 15, the oldest 55 years. It attacked persons for the most part in easy circumstances, who were careful as to personal hygiene. The localisation *par excellence* is the inguino-cruro-scrotal fold, but it is sometimes encountered below the mammæ, in the axilla, and in the interdigital spaces. While usually commencing in the groin, and extending from thence, it has been seen to originate in the axilla. Very rarely it has been seen on the general surface without involving a fold. This case was in a child of four, but on examining his father he had the same on the groin. Nicolau thinks that some aberrant instances of pityriasis rosea may prove to be due to this parasite. When fully developed, the aspect is characteristic. There is a rosy coloration, more or less pronounced, having a slightly yellowish tint. The surface is dry, covered with fine scales, sometimes so fine that desquamation is almost inappreciable. Though flat as a rule, there may be a degree of papulation. It may become eczematised, the area affected being red, swollen, and set with oozing vesicles. The condition, when the interdigital spaces are implicated, is altogether peculiar, and does not suggest a trichophytic lesion. Clinically it rather simulates an interdigital intertrigo, or perhaps rather a dyshydrosic eczema. There, marked itching

is complained of. The epidermis is found to be moist and macerated, especially between the toes, and a few discrete vesicles are visible, scattered over the lateral and plantar surfaces. When the macerated scales, taken from the bottom of the affected spaces, are examined microscopically, mycelial filaments are found, which culture proved to be those of the epidermophyton. The mycelial threads are either straight or flexuous, and more or less branched. The same flexuous and sinuous arrangement has not been seen by the author in so prominent a degree in any trichophyton. Cultivation on saccharised media is easy. When carried out there is an extraordinary abundance and regular uniformity of organs of fructification. These are fusiform, and remind one of a bunch of bananas. Its chief characteristic is to develop in the folds of the skin, and only exceptionally to invade the general surface. Hence Nicolau prefers the title "epidermophyton of the folds" (epidermophyton plicarum) to epidermophyton inguinale.

W. A. J.

MEDICAL JURISPRUDENCE.

UNDER THE CHARGE OF

HARVEY LITTLEJOHN, M.B., F.R.C.S.

Left-handedness in Workmen's Compensation.

Marcus (*Aerztliche Sachverständigen-Zeitung*, No. 3, 1913) shows that in Germany right-handed persons whose right hands are injured receive 10 per cent. higher compensation, with the result that left-handed persons simulate right-handedness in order to receive the higher compensation. Sometimes also where a purpose has to be served, the opposite is simulated, not only by those congenitally left-handed, but also by those who are left-handed in virtue of their occupation, such as glass-blowers and waiters.

Statistics show that in 1910 out of 901,000 persons who received compensation amounting to 118 million marks, 37½ per cent. referred to hand injuries, whether right or left, that is to say, 338,000 hand injured persons in 1910 received compensation to the amount of 44 million marks.

Of these 338,000 persons 170,000 received compensation for injury to the right and 168,000 to the left hand, and Marcus calculates that amongst the alleged right-handed persons there were 5100 who were really left-handed, and that the insurance societies were thereby defrauded of 300,000 marks. These statistics indicate the desirability of discovering some means of distinguishing right and left handed persons, and also the advantage of the medical examination being directed as soon as possible after the injury to this point.

The author discusses the various tests which may be applied, as well as the anatomical and physiological indications of right-handedness which are present, he states, in 97 per cent. of all persons, although

allowance must be made for acquired right- or left-handedness arising from special causes, such as occupation, etc.

Suicide in Relation to Accident and Workmen's Compensation.

Dr. K. Mendel of Berlin, as a result of the study of suicide after accident with suicide statistics in general, has arrived at the following conclusions (*Monatschr. f. Psychiat. u. Neurol.*, Bd. xxxiii. Heft 4):—While persons who are suffering from the effects of an accident frequently give expression to a desire to end their lives—often possibly to support the claim for compensation—yet suicide is actually a rare occurrence. Amongst 2000 cases of accident and claims for compensation there were only 7, in the author's experience, in which the question of suicide or attempted suicide had to be decided in connection with the compensation. Many threaten but few actually commit suicide. As regards the age of suicides amongst the class we are dealing with, it is work-people at the best years of their lives, that is to say, the years when accident is most frequent, who furnish the greatest number of cases of suicide, and it follows that for the most part we have to deal with married men. It is possible therefore that the anxiety of providing for children may have an influence in the commission of the deed.

The method of suicide adopted, as is the case in connection with suicide in general, does not serve as an indication of the mental condition at the time. The majority, however, choose death by means of hanging.

The original accident may not have been severe, nor need it have been an injury to the head—very frequently the injury was very slight, and bore no relation to the severity of the resulting nervous and mental symptoms. The interval between the accident and suicide is as a rule 1 to 2 years, the interval being characterised by neurasthenic and hypochondriacal symptoms, which form a connecting link.

In the great majority of cases there is a condition of hypochondriacal depression, but it does not necessarily follow that this is wholly due to the accident. The author is of opinion that there must have been present a predisposition to mental depression, the injury merely acting as a factor or it may be one of the chief factors in determining the fatal result.

After discussing the question of compensation in such cases according to the provisions of the German law, the author concludes by insisting upon the necessity of a thorough post-mortem examination—an opinion which all who have had experience in these cases will heartily endorse.

Heart Disease amongst School Children.

Meyer of Berlin (*Zeitschr. f. Schulgesundheitspflege*, 1912, No. 8) examined 5831 children, boys and girls commencing school attendance,

during the period 1900-12, and found 51 to be suffering from organic heart disease: 19 of these were probably congenital in origin, while scarlet fever, diphtheria, and commencing Basedow disease were accountable for 6 cases. In the remaining 26 there was no discoverable cause.

Amongst 3649 children in the later years of school life he found 49 affected with heart disease, but again in the majority no satisfactory cause was discovered. The author suggests that possibly measles, which affects more than half the children before they attend school, may have something to do with the origin of the heart affections. The frequency of heart disease increases from the lower to the upper classes, so that puberty, so far as the heart is concerned, must be regarded as a factor of importance.

The Diagnosis of the Status Thymo-Lymphaticus.

Professor Schridde (*Münch. med. Woch.*, 1912, No. 48) draws attention to the importance of this condition, which is so frequently found in cases of sudden death amongst children in which no other cause of death is apparently present. He enumerates the following appearances as characteristic of the condition:—Above all the characteristic pallor of the delicate skin is striking, while there is usually a well-marked development of subcutaneous fat of a pale yellow colour and unusual moistness. The thymus gland is more or less enlarged, and there is associated a general hyperplasia of the lymphatic parenchyma. The Malpighian corpuscles of the spleen as well as the spleen itself sometimes are enlarged. There is frequently a remarkable hyperplasia of the lymphatic tissue in the stomach and intestines, while the papillæ at the base of the tongue and the tonsils of the throat and pharynx are enlarged. The mesenteric glands are increased in size, and not infrequently in places where no true lymphatic tissue is present lymphatic nodules are developed, as, for example, in the mucous membrane of the trachea and vagina, in the connective tissue of the liver, kidneys, the skin, and in the bone marrow. Lastly, there is found in true cases more or less well-developed dilatation and hypertrophy of the left ventricle of the heart. The appearances may not be well marked or characteristic in certain cases, and in them only a microscopic examination of the tissues will enable a diagnosis to be made.

The author regards hyperplasia of the medulla of the thymus gland as a special and characteristic condition of the disease, and suggests that owing to a failure to recognise this fact many investigators have described the thymus gland in cases as normal. During life, he states, a certain criterion of the status thymo-lymphaticus is to be found in the constant presence of hyperplasia of the glands at the base and sides of the tongue.

Indirect Rupture of the Intestines in Connection with Wounds from Firearms.

Neudörfer (*Ibid.*, 1912, No. 40) records two instances of indirect rupture of the intestines in connection with revolver wounds of the abdomen.

In both cases there were perforating wounds of the abdomen and intestine, but in addition in each case there was also a rupture of the transverse colon about the size of a pea, which could not have been caused by the bullet. In the first case this indirect wound was overlooked, with the result that the patient died: in the second the precaution was taken of examining the large intestine, and the patient's life was thereby saved.

The author is unable to offer an explanation of how such indirect ruptures are caused, but he recommends that in every case of a wound of the abdomen by firearms the surgeon should make a careful examination of the whole intestinal canal.

The Effects of Mechanical Violence Inflicted on Bodies after Death.

Lesser of Breslau (*Vrtljhrschr. f. ger. Med.*, 1912, Bd. xliv. H. 2) records a number of experiments, chiefly on newly-born infants, which show that violence applied to a body several hours after death produces hæmorrhages and œdematous swellings which simulate very closely injuries produced during life.

The experiments included injuries to the head, throat, chest, and abdomen by blunt and sharp instruments, and the appearances resembled in most respects those following an injury during life.

The author is not prepared to offer an explanation of the phenomena until he has had an opportunity of carrying out further experiments on infants and animals, but the results obtained are interesting, and indicate that care must be exercised in giving an opinion as to the *ante-* or *post-*mortem infliction of injuries.

The Detection of Menstrual Blood by Means of the Glycogen-Iodine Reaction.

Dyrenfürth (*Zeitschr. f. Medizinalbeamte*, 1913, No. 12) has carried out an investigation upon this subject. Moseati employed the presence of glycogen in the human placenta as a means of determining the period of gestation, and recently the glycogen in the liver has been suggested as a means of deciding whether the death of a person took place suddenly or not. Wiegmann has also indicated the importance of the method for the detection of sexual offences, and recommends that the material should be teased in Lugol solution or iodine-glycerine. By this means vaginal epithelium shows itself as brown flakes, while

the cells from other parts do not take on a brown colour, with the exception of the epithelium from the mouth and œsophagus.

Dyrenfürth has confirmed Wiegmann's results as regards vaginal secretion, but found that in old menstrual blood-stains the reaction was interfered with by the presence of blood corpuscles which prevented the easy recognition of the brown-coloured glycogen cells. He endeavoured, therefore, to find a method of overcoming this difficulty, and after trying various means he recommends the following procedure :—

A small particle of the blood-stained fabric is rapidly teased in a drop of saturated solution of sodium bicarbonate and a drop of Lugol's solution added. Under the microscope the blood corpuscles are seen to have wholly disappeared, and the brown-stained glycogen cells, if present, are at once apparent. This method was submitted to various control experiments with satisfactory result, and in the opinion of the author should prove of value in deciding questions of medico-legal interest, such as whether blood on a chemise is menstrual or not in cases of alleged criminal assault.

Revolver Wound of the Heart without Perforation of the Pericardium.

Berg records a case of great interest (*Ibid.*, 1913, No. 4). A man who was shot by a revolver at close quarters closed with his assailant, knocking him down, but shortly afterwards collapsed, and died half an hour after being wounded. At the post-mortem examination the entrance wound of the bullet was found to be situated at the level of the nipple on the left side of the chest and 5 cm. from the middle line of the body. The bullet had passed through the skin and cartilage of the 4th rib, and was found lying free in the tissues between the chest wall and pericardium. The pericardium was bruised but not perforated. In the right ventricle of the heart there was a hole corresponding in position to that of the bullet, and the pericardial sac was filled with blood. The bullet was a 7 mm. lead bullet, and it lay transversely in the tissues.

The author is of opinion that the bullet probably struck the pericardium transversely with considerably diminished velocity and, pushing it inwards like the finger of a glove, caused the wound in the heart. He refers to an exactly similar case recorded by Georg Fischer in the *Arch. f. klin. Chirurgie*, 1868, Bd. ix.

A Case of the Heart Pulsating after Death.

Drozynski of Leipzig records (*Med. Klinik*, 1912, No. 35 and 36) the following case :—He performed an autopsy upon a person 55 years old who had suffered from paralysis. On opening the chest the heart

showed nothing of special interest, although it was under observation for several minutes. Before opening the heart he proceeded to examine the brain, and at the moment when he separated the brain from the spinal cord the heart began to beat actively, so that the pulsations could be seen at a distance of several yards. On closer inspection it was seen that the pulsations only affected the right side, and that they originated at the entrance of the superior vena cava. The ventricular action was weaker than that of the auricle, and varied in rate and intensity, whereas the auricular contractions were uniform, and at the rate of 50 to 60 pulsations a minute. The activity of the ventricle ceased at the end of 13 to 15 minutes, while that of the auricle was regular for half an hour, and only ceased entirely after the lapse of $3\frac{1}{2}$ hours.

The Amount of Alcohol in the Blood under Varying Conditions.

Schweisheimer records a large number of estimations of alcohol in human blood (*Deutsch. Arch. f. klin. Med.*, 1913, No. 109). In normal blood the quantity was found to be 0·02 to 0·04 grm. per litre. The patients in hospital received no alcohol for several days prior to the experiments. After administration of alcohol the quantity in the blood rose by 0·05 pro mille. The whole of the ingested alcohol passes into the blood. Amongst non-drinkers, moderate drinkers, and excessive drinkers it was found that after the ingestion of the same amount of alcohol, the quantity of alcohol in the blood at the same period of time after ingestion varied very considerably. The concentration of the absorbed alcohol in the blood is higher in those unaccustomed to alcohol. The maximum concentration in this latter class is reached in $1\frac{1}{2}$ to 2 hours, and is maintained for some time. Amongst those accustomed to alcohol the maximum concentration is reached very quickly and soon diminishes. The alcohol is excreted twice as quickly by those accustomed to it as by those who are not in the habit of taking it ($7\frac{1}{2}$ hours). The psychical effects of alcohol depend upon the degree of its concentration in the blood, and the more or less marked symptoms of drunkenness are on parallel lines with this concentration.

The above facts are of interest and importance in connection with the question of differential diagnosis and in medico-legal cases, and the author states that the analysis of the blood can be made in the course of half an hour, thus enabling an opinion to be given whether unconsciousness is the result of alcohol or not. The hypersensitiveness of epileptics to alcohol is probably due, in part, to an abnormally large absorption of alcohol into the blood. H. L.

NEW BOOKS.

Surgery: Its Principles and Practice. By Various Authors. Edited by William Williams Keen. Vol. VI. Pp. 1177. 519 Illustrations. Philadelphia and London: W. B. Saunders Co. 1913. Price 30s. net.

Keen's *Surgery* has proved, as was confidently anticipated, a very successful and universally popular work, and we desire to congratulate very heartily the distinguished editor on the successful accomplishment of so important an undertaking. The sixth and concluding volume is probably more indispensable than any of its predecessors. Although only seven years have elapsed since the publication of the first volume, the progress of surgery in many departments has been so rapid that some of the earlier matter is already obsolete, and accordingly several of the contributors were asked to furnish supplementary matter so as to bring their chapters up to date. New chapters have been introduced on anoci-association, the surgery of the thorax and of the hypophysis, and the newer methods of inducing anæsthesia. A general index to the whole six volumes is another notable and valuable feature.

A Text-Book of Midwifery for Students and Practitioners. By R. W. Johnstone, M.A., M.D., F.R.C.S., M.R.C.P.E., Assistant to the Professor of Midwifery and to the Lecturer on Gynæcology in the University of Edinburgh. Pp. 485, with 264 Illustrations. London: A. & C. Black. Price 10s. 6d. net.

This excellent and clearly-written text-book of midwifery is published opportunely and supplies just what is wanted, in a convenient size, for the student who desires an up-to-date compendium of the art of obstetrics. There is a graceful dedication to Sir Halliday Croom, whose teaching has inspired the author, as it has so many before him.

The chapters on the early development of the ovum and placenta call for special mention. They have already been published as a brochure, and are here a little amplified. We have never seen this complicated subject put more simply, and at the same time so adequately, from an obstetric point of view. The management of labour is well described, and can be recommended as a safe guide to the practitioner. Perhaps in a subsequent edition the author may be able to speak a little less disparagingly of the assistance the forceps may give, in skilled hands, in favouring forward rotation of the occiput in occipito-posterior cases. The use of pituitrin, and possibly also of quinine, as an adjuvant to Krause's method of induction of premature labour, might with advantage have been stated.

The toxæmias of pregnancy receive due recognition, are excellently discussed, and the methods of treatment are justly put. It is a pity that the author does not more definitely distinguish between *accouchement forcé* (as ordinarily understood) and vaginal hysterotomy—the former a treatment as a rule to be deprecated, the latter a clean surgical procedure, involving no tearing or rending.

The book is well arranged, well illustrated, and is a pleasure to read. Some minor points, such as those already indicated, will no doubt be rectified ere long in future editions. It incorporates clearly the obstetric teaching of the Edinburgh school, and the author is to be congratulated, as well as the school, on a distinctly creditable production.

It is well seen that the publishers of the works of Sir J. Y. Simpson and Matthews Duncan still retain their honourable place in the march of progress.

The Surgery of the Stomach. By HERBERT J. PATERSON, M.A., M.C., M.B.(Cantab.), F.R.C.S.(Lond.). Pp. 312, with Plates. London: Jas. Nisbet & Co. 1913. Price 12s. 6d. net.

THE author of this work has devoted much attention to the study of diseases of the stomach from a surgical point of view, and has embodied the results of his experience in a compact and readable form.

The opening chapter on the method of investigation of gastric cases contains much useful information, particularly with regard to the administration of test-meals and the examination of the stomach contents. The author, rightly, we think, does not place much reliance on percussion or auscultatory percussion of the stomach, except in combination with distension of the viscus with air, and since the X-ray examination after a bismuth meal has become available this method has fallen into disuse. The various operations on the stomach are described systematically, and are illustrated by instructive photographs. The series of figures illustrating gastro-jejunostomy are not so successful as the others: the parts are too small, and the hands of the operator occupy too much of the picture.

The chapter on treatment after gastric operations will be found useful. We agree with the author that the patients may be fed almost at once after an operation on the stomach, although we scarcely think it necessary to confine them to a milky diet for at least six months. Nor is the author quite consistent on this point, as he quotes a case in which he allowed a patient "two mutton chops and a milk pudding" on the third day after gastro-enterostomy.

A chapter is devoted to the physiological effects of the operation of gastro-jejunostomy, in which he makes out a very good case for his proposition that this is not to be looked upon as essentially a drainage operation.

Mr. Paterson analyses the evidence regarding the relationship between gastric ulcer and cancer, and finds it "difficult to accept the hypothesis that carcinoma is grafted on simple ulcer in such a high percentage of cases as is taught at the present time."

Gastric carcinoma and other tumours of the stomach are exhaustively dealt with. We are glad to find that the author adopts the term "fibromatosis of the stomach" suggested by Alexis Thomson. The chapter on this condition will require to be considerably amplified in a subsequent edition, in the light of Mr. Thomson's important paper recently published in this *Journal*.

Each chapter is furnished with a useful bibliography of the subject dealt with, but the lists are often far from complete.

We can confidently recommend this work as a reliable and authoritative presentation of the present position of gastric surgery.

Diseases of the Mouth. By Professor F. ZINSSER, Lindenburg. Translated by JOHN B. STEIN, New York. Pp. 268. With 73 Illustrations. 52 Coloured Plates. London: Rebman, Ltd. N.D. Price 30s.

THIS work has been translated with great care and edited by the Professor of Physiology at the New York College of Dentistry, and will prove of great value to dental students who have special opportunities of observing the various lesions of the buccal cavity. It is largely concerned with the various manifestations of syphilis met with in the mouth and pharynx, but many other lesions are dealt with, and their differential diagnosis is fully discussed. The outstanding feature of the work, however, is the series of beautiful coloured plates which illustrate in a graphic and convincing manner the different lesions of the mouth. This work should have a place in every medical library.

Glandes surrénales et organes chromaffines. Par M. LUCIEN et J. PARISOT. Pp. 453. Avec 100 Figures dans le Texte. Paris: F. Gittler. 1913.

THIS is a volume of a series by the same authors on the anatomy, physiology, and pathology of the internal secreting glands.

Whoever is interested in the internal secreting glands, and has become familiar with the literature, will be satisfied that the authors of this series are most highly qualified for the task they have undertaken. The volume under review is divided into four parts, in the first of which the anatomy of the suprarenals is described. Chapter I. of this part is occupied with the comparative anatomy, Chapters II. and III. with the development and anatomy of the human suprarenals. Chapter IV. is devoted to the histology, and V. to accessory suprarenal and chromaffin organs. This part occupies 100 pages, and is illustrated with 40 figures in black and white. The majority of these are

new and also good. Fig. 21 is less successful than the others. In a work such as this is, exact information as to the papers quoted would have increased its value as a work of reference. Full credit is, however, given to the many authors quoted, and when there are conflicting views on any subject the reader is left in no doubt as to the side on which the weight of opinion rests, favourably or unfavourably. Part II. occupies 150 pages, and deals with physiology of the suprarenals. In Chapter I. the experimental effects of bilateral and unilateral adrenalectomy are described, as well as those symptoms following slower destruction of the capsules. They also discuss here the importance of the medulla and cortex respectively, and the quantities of these tissues necessary for the maintenance of life. In this chapter also is described the symptomatology and lesions in suprarenal insufficiency, including a description of the effects on the cardio-vascular apparatus, the blood, neuro-muscular, digestive, nutritional, and respiratory functions. In Chapter II. the general actions of suprarenal gland extracts occupies only 7 pages, but in the following four chapters this subject is elaborated in considerable detail. In these also the biological chemistry of the suprarenals, their action on the circulatory apparatus, on nutrition, digestion, respiration, and many other functions, is fully considered. In this part also, the physiology of the accessory chromaffin structures, and the relationship of the suprarenals to the defence of the organisms, are critically considered. In Part III. 90 pages are devoted to pathology, from which the solid advance that has been made in the study of the diseased glands can be realised. In this part there are twenty-five excellent illustrations, chiefly of histological appearances. Part IV., entitled "Les syndromes surrénaux en pathologie," is the part which is of chief interest to the clinician. It will perhaps surprise many that 110 closely printed pages can be devoted to clinical syndromes related more or less closely to abnormalities of the suprarenal capsules and the chromaffin tissues. We would advise anyone who is sceptical to purchase this book. He will learn a great deal that he ought to know, and he will learn to interpret a great many clinical facts that have been, but need not longer be, mysterious.

The book lacks an index, but there is an excellent "Table des matières."

Text-Book of Ophthalmology. In the Form of Clinical Lectures. By Dr. Paul Roemer, Professor of Ophthalmology at Greifswald. Translated by Dr. Matthias Lanckton Foster. Vols. II. and III. Pp. 896. 199 Illustrations. London: Rebman, Ltd. Price 10s. 6d. each.

In the second volume of this excellent text-book we find a very full account of injuries of the eye, with the addition of a valuable discussion

on the question of the earning capacity of workers with impaired vision after injury. Chapters on orbital diseases and on glaucoma are also of peculiar interest, and beautifully illustrated.

In Vol. III. we find exhaustive chapters on the pupil, on paresis of the ocular muscles, and on the neurology of the eye. The last chapter, which deals with the testing of the function of the eye and the estimation of refractive errors, is written in clear and simple fashion. A short yet very useful appendix on asthenopia is added by the translator, in which the American point of view is put forward.

We consider that Professor Roemer's book, while too bulky for the ordinary English student, is a work so unique and valuable that it should be in the library of every ophthalmic surgeon. The publishers are to be congratulated on the appearance and printing of the book and on the fine reproductions of the coloured plates.

Sclero-Corneal Trephining in the Operative Treatment of Glaucoma. By Lieutenant-Colonel Robert Henry Elliot, I.M.S., Madras, S. India. London: George Pulman & Sons, Ltd. 1913. Price 7s. 6d. net.

The past few years have seen a renaissance in the operative treatment of glaucoma, for it is safe to say that at no period since the introduction of iridectomy by Von Graefe in 1856 has the subject of glaucoma been so much studied from the practical point of view. The treatment of glaucoma by sclerectomy is certainly not new, but the technique within the past few years has reached a point approaching perfection. Nowhere are the minute details of the various methods employed by different operators more fully and more carefully described than in the present monograph. Consisting of twelve chapters contained in 111 pages, the methods practised by other operators, as well as his own, are clearly and lucidly set forth by one whose experience of the disease and its treatment in South India is almost unique.

We have read the book with the greatest interest, and can recommend it to every operator who has to deal with this important and altogether dread disease. The book is well printed, and equally well illustrated, reflecting credit on author and publishers alike. It is undoubtedly a valuable contribution to modern ophthalmology.

Diabetes: Its Pathological Physiology. By John J. R. Macleod, M.B., Ch.B., D.P.H. Pp. 224. London: Edward Arnold. 1913. Price 10s. 6d.

This book is one of the series of International Medical Monographs issued under the general editorship of Drs. Leonard Hill and William Bulloch. It is a most valuable addition to the series, and those specially interested in the subject with which it deals will certainly find it to be an indispensable work. The subject is dealt with in a duly

balanced, concise, and accurate form, and judgment has been exercised in the choice of references to the very extensive recent literature. The subject-matter of this volume formed the theme of a series of eight lectures delivered during the summer session of 1912 in the Physiological Laboratory of the University of London. As the sub-title indicates, attention is more particularly directed to such investigations as bear more or less directly on the nature of the abnormal conditions in the body that are the cause of the disease. Perhaps the book will appeal most to those engaged in experimental investigation, but the physician who wishes, as he ought, to understand this increasingly abstruse subject must needs have such a volume as the present by him. As the author says in his preface, "Physicians who have had most success with such cases are those who, by close attention to the results of experimental investigations, have a thorough knowledge of the physiological processes that become upset in the disease."

In the first chapter the various tests for sugar are critically considered in a manner which shows the author to be a complete master of his subject. In Chapters II. and III. the sugar of the blood and the nerve control of the sugar content of the blood are dealt with. Then follows an easy step to the consideration of the relationship of the various ductless glands to sugar metabolism, the glycogenic and glycogenolytic functions of the liver. In the last chapter the assimilation limit of sugars and of starch, the diagnosis and treatment of incipient diabetes in man, and glyconeo-genesis are considered.

At the end of each chapter there is a classified list of references: the text is illustrated by tables and curves, and there is a good index.

The book is well printed and bound. The author and the publisher have both reason to be satisfied with their work.

NEW EDITIONS.

A Manual of Surgical Treatment. By Sir W. Watson Cheyne, Bart., and F. F. Burghard. New Edition. Revised and largely rewritten by T. P. Legg and Arthur Edmunds. In Five Volumes. Vol. IV. London: Longmans, Green & Co. 1913. Price 21s. each Volume.

We have already expressed a favourable opinion of the first two volumes of the new issue of Cheyne and Burghard's manual. The fourth volume is now before us. It deals with affections of the jaws, tongue, and alimentary canal. The last section naturally shows most changes from the previous edition, and while the authors tend to adhere to some of the older methods of treatment, the most recent developments in technique are not overlooked. This is a standard work of reference, and should be in every surgeon's library.

A Practical Treatise on Fractures and Dislocations. By Lewis A. Stimson, New York. Seventh Edition. Pp. 930. With 459 Illustrations and 39 Plates. London: J. & A. Churchill. 1913. Price 24s. net.

It is scarcely necessary to do more than chronicle the appearance of a new edition of such a standard work as Stimson's *Fractures and Dislocations*. It is a veritable mine of information on the subjects dealt with, the section on dislocations, which occupies nearly half the book, being more exhaustive than any other work with which we are acquainted. The additions to our knowledge of the details of fractures afforded by the use of the X-rays has necessitated some enlargement of the work, and the insertion of many new illustrations. The author is eminently conservative with regard to the operative treatment of recent fractures, and we are inclined to agree with him in his judicial summing up of the present position of this question. We would gather from the brevity of the discussion on the use of massage and movement in the treatment of fractures that the author has not given this method any very extensive trial, otherwise we think he would have been less tentative in his opinions on the matter.

Handbook of the Diseases of the Rectum. By Louis J. Hirschman, M.D. Second Edition. Pp. 339. With 172 Illustrations. London: Henry Kimpton. 1913. Price 18s.

Although only four years have elapsed since the first edition of this work was published, the second edition has been thoroughly revised and enlarged, and numerous fresh illustrations and X-ray photographs added. The writer throughout the book constantly impresses the reader that early minute and systematic examination of the anal canal and rectum is essential in every patient complaining of symptoms referring to that region. The old-fashioned digital examination of the rectum is now no longer sufficient. "No patient presenting the symptoms of interference with the regularity or quantity of his bowel movements should have any treatment without that patient being subjected to a complete digital, anoscopic, proctoscopic, and even sigmoidoscopic examination, in order to make a definite diagnosis. The patient suffering from the symptoms of constipation is just as much entitled to a proctologic examination as the one suffering from a cough is to the inspection, auscultation, and percussion of the chest." The question as to how the "office" of the general practitioner should be fitted up is discussed in Chapter III., but such elaborate arrangements would hardly be practicable in this country. The author's operation for rectal valvotomy is simple and ingenious. The lines of treatment laid down, both palliative and operative, are sound, but such operations as those for hæmorrhoids, fistula, and ischio-rectal abscess, to mention three among many suggested, are not at present considered suitable

cases for treatment in the "office" or consulting-room in this country. The chapter on local anæsthesia is good, and draws attention to the fact that many operations in this region, which are usually performed under a general anæsthesic, can be readily carried out under local anæsthesia. The author prefers beta-eucaine lactate for skin anæsthesia, and 1 per cent. solution of quinine and urea hydrochloride for infiltration of the tissues. If the rules laid down by the author were acted upon by all general practitioners there would be less cause to regret the delay that unfortunately still frequently occurs in cases of carcinoma of the rectum, for want of efficient examination when the patient is first seen.

The illustrations are numerous and excellent, and those representing semi-diagrammatic sections of the lower end of the rectum and anal canal are very clear and convincing. A special chapter on dysentery and its treatment by John L. Jelks, M.D., is included in the volume.

The Practitioner's Encyclopædia of Medicine and Surgery. Edited by J. Keogh Murphy, M.C.(Cantab.), F.R.C.S. Second Edition. London: Henry Frowde and Hodder & Stoughton. Price 35s. net.

The field of knowledge which the doctor in practice is expected to cover is well indicated by this volume, with its nearly fifteen hundred pages. There is no doubt that, even on subjects with which he is intimately acquainted, the doctor who in his practice may have to turn suddenly from a case of cancer of the breast to one of incipient delirium tremens, or from a difficult labour to a meeting of the committee for planning the construction of a cottage hospital, is glad to refresh his mind by looking at a concise and well-arranged statement of the matter which is engaging his attention, both to remind him of things which he already knows, and to suggest to him new lines of thought which he may not have had an opportunity of becoming acquainted with. He will find all that he wants in this book.

That this volume has proved to be useful is amply demonstrated by the fact that a second edition has been called for within seven months of the publication of the first edition.

The arrangement of the volume is very convenient. The subject to be studied can readily be found, and there is not the same amount of overlapping as may often be met with in an encyclopædia arranged on alphabetical lines. To show the quality of the articles it is only necessary to mention the names of some of the contributors, of whom there are more than two hundred. There are articles by Sir William Osler, Sir William Watson-Cheyne, Sir Thomas Clouston, Dr. James Mackenzie, Dr. Leonard Guthrie, Dr. Macnaughton Jones, Dr. Jellett, Professor Sims Woodhead and many other well-known writers. We can very

cordially recommend this volume to all doctors engaged in general practice who wish to have an accessible and reliable book of reference.

A Short Practice of Midwifery. By HENRY JELLETT, B.A., M.D., F.R.C.P.I. Sixth Edition, Revised and Enlarged. Pp. 619. London: J. & A. Churchill. 1913. Price 10s. 6d.

THE fact that this text-book of midwifery has reached its twentieth thousand in the sixth edition shows how deservedly popular it has been. The subject is treated in a practical way, and the author's lucid style makes it eminently readable. Asepsis in midwifery rightly occupies a prominent place. Among the minor points on which the author lays himself open to criticism we may mention the *rôle* ascribed to the retraction ring in cutting off the general contents pressure of the uterus from the fore-waters. The retraction ring cannot develop until the uterine muscle can retract through the partial escape of the uterine contents. As regards the third stage of labour, it would be interesting to know how often there is complete inversion of the placenta, so that the insertion of the cord presents. This is described as the normal mechanism, but the evidence from sectional anatomy and clinical investigation shows that it is exceptional. By a tubal abortion is usually understood the escape of the ovum from the fimbriated end of the tube, not simply the rupture or perforation of its capsule: and why does the inventor of the blunt hook get the credit of the classical section of the second stage of labour? It is also difficult to understand how an apparatus attached to the lock of the forceps can give "true axis traction." These are, however, minor criticisms of a work which admirably sets forth the teaching of the Dublin School of Midwifery.

Tuberculin Treatment. By CLIVE RIVIÈRE and EGBERT MORLAND. Second Edition. Pp. 247. London: Henry Frowde, and Hodder & Stoughton. 1913. Price 6s.

THIS edition follows close on the heels of its predecessor.

The authors say: "Since preparing the first draft, four points have specially impressed themselves on the writers: Firstly, the rapid growth of institutions in the British Isles where tuberculin is given, and the safety of its careful administration; secondly, the danger of ill-considered general reactions, and the grave doubt whether the deliberate production of a focal reaction is wise in pulmonary cases; thirdly, the very great value of a uniform standard of measurement for tuberculin, and of the cubic millimetre as a unit; fourthly, amongst the abundance of new preparations the value and growing importance of the albumose-free tuberculin."

Emphasis may be laid, we think, on "the safety of its careful administration" and "the danger of ill-considered general reactions."

The "Nauheim" Treatment of Diseases of the Heart and Circulation. By Leslie Thorne Thorne, M.D., B.S.(Durham), M.R.C.S.(Eng.), L.R.C.P.(Lond.). Fourth Edition. Pp. 104. 55 Illustrations. London: Baillière, Tindall & Cox. 1913. Price 3s. 6d. net.

This little volume, which has now reached its fourth edition, is intended to be a practical guide for those who desire to give their patients the benefit of the Nauheim treatment in this country. Part of the book deals with practical details concerning the baths, while another chapter is devoted to a description (with illustrations) of the "Schott" resistance exercises, which form such an important part of the treatment. A chapter which will be especially welcomed is one which gives the writer's experience regarding the suitability of various forms of circulatory affections for the Nauheim treatment. His list of such suitable cases seems perhaps to err on the side of optimism, but he is careful to show, by records of actual cases, that marked improvement has followed the treatment in some instances. We note that, in dealing with blood-pressure, the word "milligrammes" is repeatedly used where "millimetres" is obviously meant: this is, however, a small blemish in a book which is eminently practical, and a useful exposition of the subject of which it treats.

Practical Physiological Chemistry. By Sidney W. Cole, M.A. Third Edition. Pp. 230. Cambridge: W. Heffer & Sons. 1913. Price 7s. 6d.

This book is a revised and enlarged edition of a smaller book entitled *Practical Exercises in Physiological Chemistry.* The arrangement differs somewhat from that of the older book in so far as a short theoretical introduction, clearly and concisely written, precedes every chapter. The actual experiments are very clearly described, and great attention has been given to the details necessary for their successful performance. A considerable amount of new matter has been introduced. The vexed question of the most suitable method for the determination of the "acidity" of a tissue fluid is discussed in considerable detail. The author takes a very extreme point of view in stating that "the use of indicators is not advised" for the estimation of the free HCl in gastric juice, and in recommending the electrical method. He seems to forget that the object of the special test meal which the clinician uses is to prevent the formation of other acids such as lactic acid and butyric acid, which would introduce a fallacy into the method of titration against indicators.

A number of new methods for the quantitative estimation of sugar —improvements on the old Fehling method—are described. Of special interest is the detailed account of Folin's new microchemical methods for quantitative urine analysis. Their importance can hardly be overestimated, and the remarks made in the preface with reference to

them are in every respect justified. "It is lamentable that for the investigation of the nitrogenous excretion of a patient, the average medical man has at present only one method at his command. That method, the hypobromite, is notoriously unreliable, and the conclusions drawn from it may be extremely misleading. It is sincerely hoped that all medical students will be taught the microchemical methods of urinary analysis introduced by Folin. The author is convinced that they are reliable, and that the average medical man could conduct them rapidly with a very small amount of special apparatus. If such training were universally adopted in England, an enormous amount of clinical material that is now wasted would become available for research, and a rapid increase in our knowledge of physiology and pathology would inevitably follow."

The book can be recommended as a reliable and up-to-date guide for practical work in physiological chemistry.

NOTES ON BOOKS.

Les pleurésies tuberculeuses, par A. Chantemesse et A. Courcoux (Paris, Octave Doin et Fils, 1913), is one of the volumes of the Bibliothèque de tuberculose, and enters with great detail into the subject discussed. An interesting historical review opens the book, and the etiology and pathology of the condition are then discussed very fully. The symptoms and varieties of tubercular pleurisy are next dealt with, and adequate space is given to the important departments of diagnosis and treatment. The whole work is liberally illustrated with photographs and diagrams, some of the latter being very instructive and interesting. As is usually the case with French medical works, the vividness of description and lucidity of style of the authors add very much to the enjoyment of the reader. The renewed interest in tuberculosis in this country should cause a demand for such a book as this, which by its completeness and accuracy merits a place in every sanatorium library.

Minor Maladies and their Treatment, by Leonard Williams, M.D., M.R.C.P., third edition (Baillière, Tindall & Cox, 1913, price 5s.). Many a young graduate who enters general practice finds that his chief difficulty lies in the treatment of those minor ailments with which his experience of hospital work has given him but a very slight acquaintance. To him Dr. Williams' book, now in its third edition, can be warmly recommended. Common symptoms rather than diseases are dealt with in a thoroughly practical manner, and the note of personal experience throughout enhances the value of the therapeutic recommendations.

The influence of eye-strain in producing digestive disturbances is a point of much interest which is emphasised. In a chapter dealing

mainly with hygienic and dietetic matters Dr. Williams condemns the use of flannel or woollen underwear, and advocates the use of wines rather than that of spirits and aerated waters. In the section on drugs and their uses, digitalis is described as a "powerful raiser of blood-pressure," a description which in the light of recent work appears to require revision. The chapter upon climatology gives some definite ideas regarding a subject to which too little attention is perhaps usually devoted. The book is brightly written, and a touch of somewhat caustic humour here and there helps to make it eminently readable.

Maternity Nursing, by Sarah Macdonald (Messrs. Methuen & Co., price 3s. 6d.). This small but attractive volume has been designed to supply monthly nurse pupils working under the guidance of midwives with something less formidable and more practical than the ordinary nurse's text-book. It is a distinctly good book when the limits of its aims are kept in view, and for the most part it is written in an easy conversational style that makes for lucidity. There are some slips—as on page 165 where 20 *drachms* are said to make one pint. On page 6 there is a bad mistake—where the normal unimpregnated uterus is described as being divided into regions by Bandl's ring. In no book, however elementary the pupils for whom it is designed, is there any possible excuse for such teaching. And it is too grotesque to be a slip.

Solidified Carbon-Dioxide in the Successful Treatment of Cutaneous Neoplasms and other Skin Diseases, etc., by Ralph Bernstein, M.D. (Frank S. Betz Co., Hammond, Ind., 1912, pp. 95). This little volume gives the author's experiences with the use of carbonic acid snow. Each disease is dealt with separately, and numerous cases are quoted. Under epithelioma the author goes rather out of his way to discuss the question of the origin of cancer. In describing the methods of procuring and applying the snow, the simpler methods which require no expensive apparatus are entirely left out, and only two appliances are described. We do not like the way in which the book is published and copyrighted by the firm of instrument makers by whom the apparatus described is supplied. The illustrations are numerous and good.

Tabular Diagnosis: An Aid to the Rapid Differential Diagnosis of Diseases, by R. W. Leftwich, M.D. (Edward Arnold, 1913, price 7s. 6d. net). This book is written with a strictly defined purpose, which is fairly indicated in the sub-title. It is for "the busy practitioner," and is designed to help him in diagnosis. It consists of a statement in the form of tables of the symptoms and signs by means of which diseases that might be confused with one another may be distinguished. Each page contains an analysis of the contrasted points of two diseases, while footnotes give their points of resemblance and also explain any special

signs and tests referred to in the tables above. There are 350 of these comparative tables in all, their subjects being arranged in alphabetical order, and an index at the end of the book giving additional convenience of reference. Such a volume on its present scale is certainly a new departure in medical literature, and should serve a useful purpose. In its condensed form it contains a great deal of information, which has been carefully compiled and admirably arranged for the purpose of easy reference. For the narrow but highly important purpose of differential diagnosis it is certainly a much more rapid guide than the ordinary text-book, and is at least as reliable.

To those familiar with German, Dr. Th. Rumpf's book on the German Insurance Act should prove a useful compendium of information. *Arzt und Reichsversicherungsordnung* (A. Marcus und E. Webers, verlag, Bonn, 1912, price 3 mks.) is a short clear description of the existing insurance system in Germany, its difficulties, and the way they are being met. We commend it to all desirous of studying the matter at first hand.

Number 16 of the excellent *Nervous and Mental Disease Monograph Series* is a translation of Wickman's well-known work on Acute Poliomyelitis (New York, 1913, price 3 dollars) The translation is by Dr. J. W. J. A. M. Maloney, and is entirely satisfactory. The date of the original is not given, but from the bibliography it would appear to be about 1910, for there is no reference to work subsequent to that date. The strong point of Wickman's monograph is its description of the symptomatology, an aspect of poliomyelitis which at present is rather overshadowed by questions of pathology and prevention This is an admirable addition to an admirable series of monographs.

Transactions of the American Gynecological Society, vol. xxxvii., for the year 1912, pp. lvi., 502 (Philadelphia, Wm. J. Dornan, 1912). The American Gynecological Society pursues its way with success and distinction. It is now thirty-seven years of age, and almost each one of its annual volumes of *Transactions* has contained one or more outstanding articles of permanent value. In the present volume the address by Dr. Howard Kelly (the President of the Society) attracts attention and rewards it, for the "History of Vesicovaginal Fistula" (with which it deals) is both full of facts and of interest. The story is brought down to the great advance in treatment achieved by Marion Sims. Whilst perhaps giving a smaller meed of praise than is customary to Sims on one aspect of his work, the President emphasises another aspect which is hardly sufficiently recognised. He says: "I do not mean to say that Sims' work was not in the highest degree original, but that the various steps did not originate with him. Sims brought success out of failure in a way which did more to demonstrate his genius than if he had made some entirely new discovery. He took the common materials which lay ready at

hand and available for all men, and where others had failed he brought good fortune out of the womb of failure. His success was due first of all to his clear recognition of those principles which have since become the basis of all successful plastic surgery—accessibility of the field, a good wide denudation in vascular tissues, accurate approximation without strangulation, and the wound placed at rest and kept clean while healing." In addition to the Presidential Address this volume contains valuable papers on Menstruation without Ovaries by Palmer Findley, on the Relation of Thyroidism to the Toxæmia of Pregnancy by Gray Ward, and on Various Aspects of Eclampsia by Davis, Tucker Harrison, Osborn Polak, Newell, and Kirkley. There is also a group of articles on Cancer of the Uterus by Clark Peterson, Taylor, Taussig, Cullen, and Neel, and another group on the Operative Treatment of Prolapsus Uteri by Montgomery, Baldy, Goffe, Polk, and Vineberg. As usual the book is handsomely bound and beautifully printed.

BOOKS RECEIVED.

Adams, J. E., and M. A. Cassidy. Acute Abdominal Diseases (*Baillière, Tindall & Cox*) 12s. 6d.
Bowlby, A. A., and F. W. Andrewes. Surgical Pathology and Morbid Anatomy. Sixth Edition . . . . . (*J. & A. Churchill*) 10s. 6d.
Carter, H. S. Diet Lists of the Presbyterian Hospital, New York City (*W. B. Saunders Co.*) 5s.
Chavasse's Advice to a Mother . . . . . (*J. & A. Churchill*) 1s. 6d.
Cunningham's Text-Book of Anatomy. Edited by A. Robinson. Fourth Edition (*Frowde, Hodder & Stoughton*) 31s. 6d.
Grant, M. F. Hints for Regimental Medical Officers of the Territorial Force (*Forster, Groom & Co.*) 1s. 6d.
Hindhede, M. Protein and Nutrition . . . . . (*Ewart, Seymour & Co.*) 7s. 6d.
Krause, R. A Course in Normal Histology, Part I. . . . . (*Rebman, Ltd.*) 5s.
Lang's German-English Dictionary of Terms used in Medicine and the Allied Sciences. Second Edition . . . . . (*J. & A. Churchill*) 18s.
Langmead, F. Forms of Mental Defect . . . . . (*J. & A. Churchill*) 1s.
Lees, D. B. The Bradshaw Lecture on Incipient Pulmonary Tuberculosis (*H. K. Lewis*) 5s.
Lorenz, A., and A. Saxl. Orthopædics in Medical Practice (*Bale, Sons, & Danielsson*) 7s. 6d.
Lyth, E. R. Studies on the Influence of Thermal Environment on the Circulation and the Body-Heat . . . . . (*Bale, Sons, & Danielsson*) 2s. 6d.
M'Murrich, J. P. The Development of the Human Body. Fourth Edition (*H. Kimpton*) 12s. 6d.
Medical and Surgical Reports of the Boston City Hospital. Sixteenth Series (*Boston*, 1913) —
Mills, G. P. and H. H. A Text-Book of Surgery for Dental Students . (*Edward Arnold*) 12s. 6d.
Reports from the Royal College of Physicians' Laboratory, Edinburgh. Vol. XII. (*Oliver & Boyd*) 7s. 6d.
Römer, P. H. Epidemic Infantile Paralysis . . . . . (*Bale, Sons, & Danielsson*) 7s. 6d.
Schweinitz, G. E. de. Diseases of the Eye. Seventh Edition . (*W. B. Saunders Co.*) 21s.
Seventeenth International Congress of Medicine, London, 1913. Handbook of the Historical Medical Museum. . . . . —
Usher, A. M. The Management of Children . . . . . (*J. & A. Churchill*) 1s.
Wanklyn, W. M'C. How to Diagnose Smallpox . . . . . (*Smith, Elder & Co.*) 3s. 6d.
Wrench, G. T. The Healthy Marriage . . . . . (*J. & A. Churchill*) 3s. 6d.

EDINBURGH MEDICAL JOURNAL.

EDITORIAL NOTES.

Clinical Teaching.

On another page there appears the first of a series of articles on clinical teaching—a subject of perennial interest in a great medical school. Having been fortunate enough to secure the co-operation of teachers of experience and repute, the editors do not claim more than a general responsibility for the views expressed. They believe, however, that since the justice of the opinions and the feasibility of the suggestions in these papers is an entirely impersonal affair and independent of the authorship, the contributions lose no force through being anonymous.

The New Poet-Laureate.

The announcement that Mr. Robert Bridges has been appointed to the office of Poet-Laureate has been received by the medical profession with a thrill of pleasure, being, as it is, the first occasion on which a member of it has attained to the honour. Medicine has had many in its ranks who have enriched our poetic literature. Campion, Vaughan, Akenside, Goldsmith, Leyden, Beddoes, and Oliver Wendell Holmes are of the number: while Keats and Francis Thompson both began, but never completed, their period of probationary study. Mr. Bridges is not a graduate of our own university, but of the University of Oxford, though we may hope that some day his name may be added to the long roll of brilliant and distinguished men whom we can claim in our honorary ranks. He was at one time in busy practice, and held appointments as Casualty Physician at St. Bartholomew's, Assistant-Physician at the Hospital for Children at Great Ormond Street, and Physician at the Great Northern Hospital. Even during his active professional life his poetic genius was not idle: and since he retired, now more than thirty years ago, the Physician has been entirely absorbed in the Poet. Indeed his association with medicine, curiously enough, does not appear to have left any abiding mark upon his poetry, and is not even suggested by it.

The appointment of the new Laureate is one which will be received with cordial approval by his contemporaries in literature, for by them

he is beloved. Only this year a representative volume of Georgian poetry was dedicated to him by the contributors ; and it is fifteen years since Mr. Newbolt inscribed to him "The Island Race." His opinion of the Laureate may be gathered from the following stanza of a poem, "Yattendon,"—the village where Mr. Bridges then sojourned :—

> "For all she lies so lonely,
> Far off from towns and seas,
> The village holds not only
> The roofs beneath her trees :
> While Life is sweet and tragic
> And Death is veiled and dumb,
> Hither, by singer's magic,
> The pilgrim world must come."

The selection of Mr. Bridges is a tribute to pure poetical genius. He has never been either a courtier or a politician, and he has ever assiduously shunned popularity—the "devil's bird-lime," as it has aptly been called. He is steeped in classicism, and, because of this, his audience, wisely discerning and keenly appreciative as it always has been, may be more select than numerous. But now he will be much more widely read and known. Fortunately his work was admitted quite recently to a place among "The Oxford Poets," and is therefore within the easy reach of all. It is upon the "Shorter Poems," the "New Poems," and the "Later Poems" in this volume, and not upon his dramas and "Poems in Classical Prosody," that the present and the future will found a judgment. In them he deals very largely with different aspects of Nature, and shows a minute power of observation which must have served him well as a physician, and we might almost say even better as a children's physician. His lyrics have a freshness and spontaneity which mark his kinship with the Elizabethans. Those who read him must be prepared for shocks both as to rhythm and as to orthography. But they must remember that he is, perhaps, the most skilled and subtle master of metre now living, and, like Campion, an accomplished musician as well, and that he has very definite views on the want of correspondence between our spelling and our pronunciation. Beauty is the keynote of all his poems—

> "that one beauty
> God put me here to find"

to use Mr. Masefield's melodious phrase, or to quote from the Laureate's own work—

> "I love all beauteous things,
> I seek and adore them ;
> God hath no better praise,
> And man in his hasty days
> Is honoured for them.

I too will something make
And joy in the making ;
Altho' to-morrow it seem
Like the empty words of a dream
Remembered on waking."

Let us give three examples out of his great and varied abundance :—
(1) From "A Passer-By" :

"Whither, O splendid ship, thy white sails crowding,
Leaning across the bosom of the urgent West,
That fearest nor sea rising, nor sky clouding,
Whither away, fair rover, and what thy quest ?
Ah ! soon, when Winter has all our vales oppress,
When skies are cold and misty, and hail is hurling,
Wilt thou glide on the blue Pacific, or rest
In a summer haven asleep, thy white sails furling ?"

(2) "I praise the tender flower,
That on a mournful day
Bloomed in my garden bower
And made the winter gay.
Its loveliness contented
My heart tormented.

I praise the gentle maid
Whose happy voice and smile
To confidence betrayed
My doleful heart awhile :
And gave my spirit deploring
Fresh wings for soaring.

The maid for very fear
Of love I durst not tell :
The rose could never hear,
Though I bespake her well :
So in my song I bind them
For all to find them."

(3) The closing stanzas from "A Hymn to Nature," magnificent alike in music and spaciousness of thought :

"Gird on thy sword, O man, thy strength endue,
In fair desire thine earth-born joy renew.
Live thou thy life beneath the making sun
Till Beauty, Truth, and Love in thee are one.

Thro' thousand ages hath thy childhood run :
On timeless ruin hath thy glory been :
From the forgotten night of loves fordone
Thou risest in the dawn of hopes unseen.

Higher and higher shall thy thoughts aspire,
Unto the stars of heaven, and pass away,
And earth renew the buds of thy desire
In fleeting blooms of everlasting day.

Thy work with beauty crown, thy life with love ;
Thy mind with truth uplift to God above :
For whom all is, from whom was all begun,
In whom all Beauty, Truth, and Love are one."

The kind of Laureate that Mr. Bridges will make is an enigma which only time will solve, but we can look forward with cheerful confidence. Much, of course, will depend on the interpretation he places on his calling. He has already written a few occasional odes, such as the one composed on the Ninth Jubilee of Eton College, and the Peace Ode after the conclusion of the South African War. In the latter he strikes a lofty patriotic note. But English alcaics will hardly appeal to the unscholarly "man in the street." Let us hope that he will never depart from his own declaration so finely expressed in his "Invitation to the Country"—

"Far sooner I would choose
The life of beasts that bask,
Than set myself a task,
Which inborn powers refuse."

and only sing when he has his singing robes upon him. Let us also hope that he will broaden out the duties of his office, making himself in truth the singer of the Nation and no mere Court official, delighting, nerving, soothing its heart as the need or opportunity arises, or even warning it as Kipling did in his immortal "Recessional." In this way he would most surely recreate an ancient office which great gifts nobly applied alone can justify, and make it at once the highest and worthiest honour attainable by any Briton possessed of illustrious poetic genius.

CONTRIBUTION TO THE STUDY OF BITEMPORAL HEMIOPIA.

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THAT bitemporal hemiopia may develop in connection with a scotoma near the centre of the field has been known for many years, though until recently little attention has been directed towards this point, the great majority of reports merely stating the presence of the hemiopia, without giving details as to its nature.

In this form—*scotomatous type*—a blind area appears near the centre of the temporal field together with some peripheral contraction, usually commencing in the upper outer quadrant. By combined development of both defects the temporal field becomes lost. Early loss of direct vision is characteristic of the scotomatous type. In the other, or *non-scotomatous type*, peripheral contraction alone occurs, and direct vision may remain good for a long time.

It is desirable to distinguish these two types and to ascertain whether, and to what extent, each has a special clinical significance.

In order to demonstrate the presence of hemiopia and its nature, a series of test-objects of different sizes, both white and coloured, must be used, and the central part of the field—within the 30 circle—must be carefully examined by Bjerrum's method.[1 2] It is essential that the size of the test object should be stated, and this is most conveniently done by using its diameter in millimeters as the numerator of a fraction the denominator of which is the radius of the perimeter or distance of the patient from Bjerrum's screen. In the present investigation the sizes varied from $\frac{1}{2000}$ to $\frac{10}{330}$, blue, red, and green being used in addition to white.

As the loss of function varies in intensity in different parts of the defective area of the field, it is only in this way that an adequate analysis of the nature of the condition can be obtained as well as results which are capable of comparison.

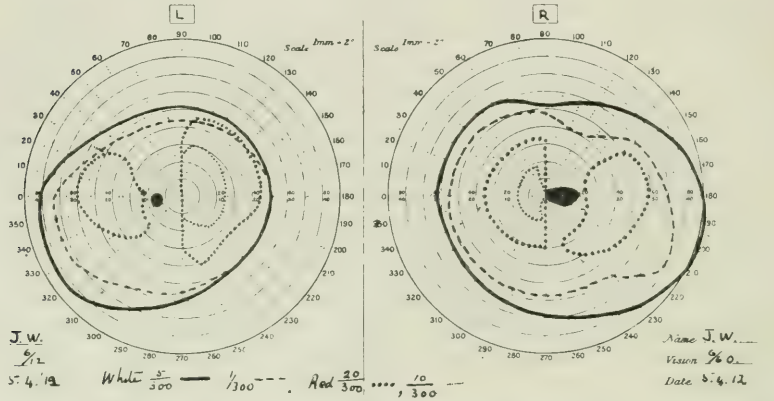
CASE I.—J. W., aged 31, came to the Eye Wards in the Royal Infirmary under the charge of Dr. Mackay in April 1912, complaining of bad sight. She has well-marked, though not extreme, acromegaly. Symptoms began to appear four years ago, loss of vision being the first noticed by the patient. The sella turcica is enlarged.

5th April 1912.—RV = $\frac{6}{60}$: optic disc pale. LV = $\frac{6}{12}$; disc normal.

The pupil reactions show some failure of light conduction on right side.

Fields of Vision (Fig. 1).—The fields for white, both $\frac{5}{300}$ and $\frac{1}{300}$, are practically unaffected excepting as regards the scotoma in the right

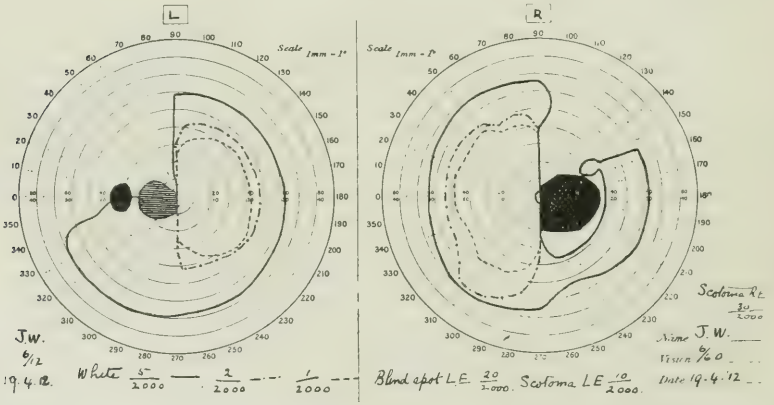
FIG. 1.



field. For red there is complete bitemporal hemiopia for $\frac{10}{300}$; for $\frac{20}{300}$ there are islands in the temporal field also. The fields are thus symmetrical, except for the unilaterality of the scotoma, and they are vertically split.

9th April.—A test with blue $\frac{10}{300}$ showed the presence of a scotoma

FIG. 2.

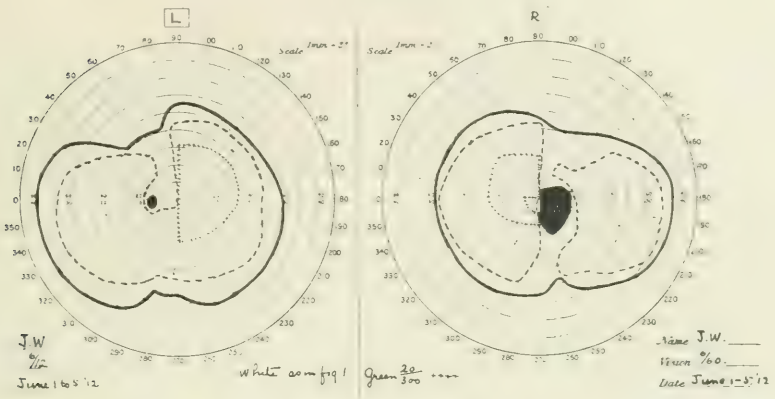


in the left eye similar to that on the right, and also that the temporal island was joined to the nasal field below.

19th April.—Fields by Bjerrum's screen at 2000 mm. (Fig. 2).—(1) There is complete bitemporal hemiopia for a small white object. (2) There are symmetrical scotomata. (3) The scotoma on the right

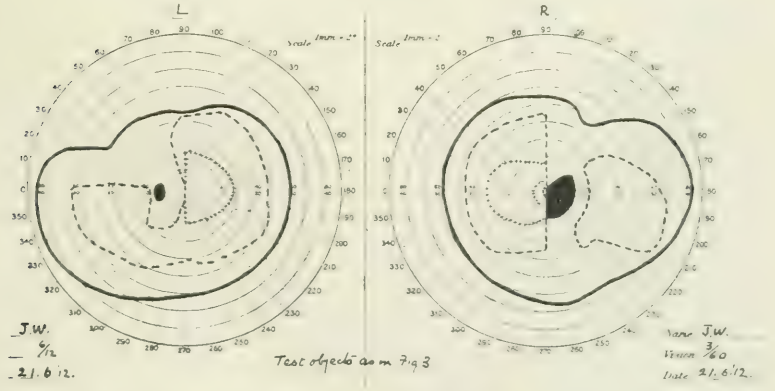
side is encroaching on the nasal field. (4) The lower temporal quadrant is still nearly intact in the left eye. In the right it is in the form of a hook-shaped process, which shows signs of failure below, leading to the formation of a temporal island.

FIG. 3.



1st to 5th June (Fig. 3).—The conditions are now sufficiently developed to be demonstrable with a small white test on the ordinary perimeter. The fields for $\frac{5}{300}$ white show indentation above and below. Those for $\frac{1}{300}$ white show the first stage of the splitting off of the temporal island in the left and complete separation in the

FIG. 4.



right. A small central scotoma for $\frac{5}{300}$ white is now present in the left field, while the right nasal field for $\frac{1}{300}$ white is failing centrally and peripherally in its lower quadrant. Note especially the central loss of the lower nasal quadrant for green $\frac{5}{300}$ on the right side. This test was still very dimly recognised on the temporal side in both fields.

The fields continued to develop along these lines, that of the right eye leading. On 10th June RV = $\frac{6}{60}$, doubtfully; LV = $\frac{6}{12}$, doubtfully.

21st June.—Fields (Fig. 4).—Note condition advancing as shown by white $\frac{1}{300}$. The fields for green $\frac{20}{300}$ are a little smaller, and the upper nasal quadrant of the right field is now deficient centrally.

On 12th July the patient went home.

18th August.—She returned ill, and barely able to get out of bed for examination. A fortnight before she had had a severe headache. The right eye had turned completely outwards and had remained in this position for three days, then returning to its normal position. At that time it had been totally blind, but she could now see a little light with it.

RV = hand movements close to face. Almost no direct pupillary reaction to light, but good consensual. Optic disc pale. LV = $\frac{5}{10}$ nearly. No consensual, but good direct reaction to light. Disc normal. The left external rectus muscle is paralysed.

The field of the left eye only was charted. The same general type as in Fig. 4 was present, but much larger objects were required to mark its limits. Thus $\frac{40}{300}$ white gave a field resembling Fig. 4 LE. $\frac{1}{300}$, and $\frac{5}{300}$ white a field resembling that for $\frac{1}{300}$ in Fig. 4 RE. $\frac{1}{300}$ white gave a nasal field only, deficient in its lower quadrant, and $\frac{20}{300}$ red gave a small nasal field with central deficiency. There was therefore a general raising of the threshold of perception, or lowering of conductivity of the nerve fibres, with approximate retention of the same limits, as if a veil had been thrown over the whole field.

In the right eye it was only possible to ascertain that vision was hardly so depressed peripherally as centrally, and was still present on the temporal side.

13th November.—The patient is now very much better in every way, and looks almost a different person. The illness of August continued for three weeks, and then her health gradually improved until the middle of October, when she felt quite well. Headache still occurs occasionally, but not so severely as before.

REV = counting fingers—in *temporal field* only. Optic disc pale; vessels small. Pupil reacts sluggishly to light from the front, but quite well if the light is directed on to the nasal half of the retina. LEV = $\frac{6}{6}$ all but one letter. Disc normal; pupil reacts well; muscles normal. The vision of this eye is therefore better than ever since the first examination. The fields show a surprising change. That of the left eye resembles Fig. 3 LE, though the upper outer quadrant defect for $\frac{1}{300}$ white is more extensive peripherally and less so centrally, where it ceases at 3° from the fixation point, which is, however, divided by a test with red $\frac{20}{300}$.

By Bjerrum's method the presence of the lower outer quadrant for $\frac{1}{1000}$ white was established, complete hemiopia existing for $\frac{20}{2000}$ green.

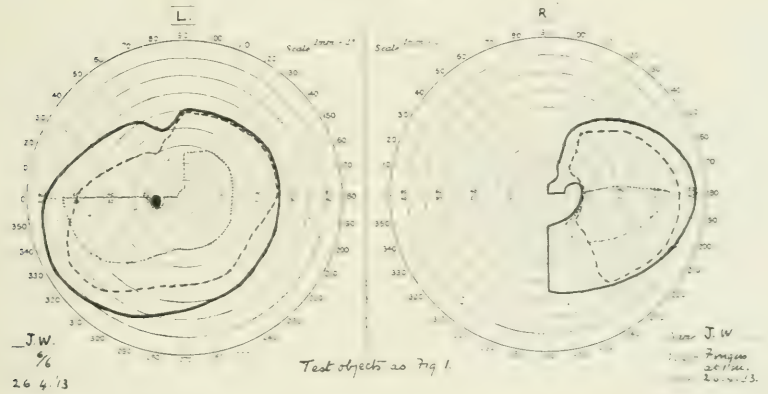
There was no trace of the scotoma previously present.

The right field shows now absolute nasal hemiopia, with some loss of the mesial portion of the temporal field, which resembles in shape the temporal island for $\frac{1}{500}$ white shown in Fig. 4, RE, but less defective centrally. The condition has therefore changed to nasal hemiopia of the right side, with an upper outer quadrant loss of the left side.

26th April 1913.—The patient is regularly at work, free from headache, and feeling well. Vision and pupillary reactions practically as in November.

The fields of vision (Fig. 5) show the same features as in November, but further improvement has occurred. The defect is now very slight

FIG. 5.



for white on the left side, and the field for red is greatly enlarged, giving a quadrant loss for $\frac{1}{300}$. The temporal field of the right eye is enlarged and shows an island for $\frac{1}{500}$ red. The improvement in the central area is noticeable, as this part had been blind for six months.

Here the causal condition was evidently a pituitary swelling producing pronounced ocular symptoms and acromegaly, and the case falls therefore into the first division of Cushing's classification, in which both glandular and neighbourhood symptoms are prominent. In this class of case acromegaly is relatively rare and hypopituitarism more common, the great majority of acromegalics having only slight visual defects, while these are more marked in cases of hypopituitarism, which also more often show other indications of intracranial disturbance, such as optic neuritis or paralysis of external ocular muscles. The explanation depends upon the fact that a more actively growing tumour is usually associated

with hypopituitarism.[3 4 5] Where, then, a tumour is producing bitemporal hemiopia, the presence of the scotomatous type may be taken as an indication of relatively active growth.

Features of interest in the clinical history are:—(1) The stage of gradual progress, with headache and steady increase in the visual defects. (2) The stage of severe illness with nerve implication (left sixth, right third) and great increase in the loss of sight, especially on the right side. There was evidently considerable intracranial disturbance at this time. (3) The stage of recovery, with alteration in the field defect, which became a modified left homonymous hemiopia.

It may be suggested that in the first stage the swelling was tensely pent up in the sella turcica, the surrounding parts being congested and œdematous. In the second stage the tumour may have burst forth and emerged on the right side of the chiasma so as to affect mainly the right uncrossed bundle, next the crossed fibres of the right eye, and least severely the crossed fibres of the left eye, the uncrossed fibres of the latter eye remaining intact. Or possibly the chiasma might have become compressed against the right carotid artery, though this seems less likely.

The subsequent improvement may be partly ascribed to the disappearance of the congestion and œdema subsequent to the displaced structures mutually accommodating themselves to some extent, but undoubtedly to a cessation of the growth of the swelling or even a diminution in its size—suggesting the bursting of a cyst.

In this connection the possibility of the future development of hypopituitarism deserves consideration, and the progress of the case is being watched with interest.

Case II.—*6th August* 1912.—Mrs. S., aged 30, had had a bad headache two weeks previously. Then her sight became dim. With the exception of occasional "bilious attacks" she seemed quite healthy. There were hypermetropia and astigmatism in each eye. After correction RV = $\frac{6}{24}$; LV = $\frac{6}{36}$. There was nothing of note on the pupils or optic disc.

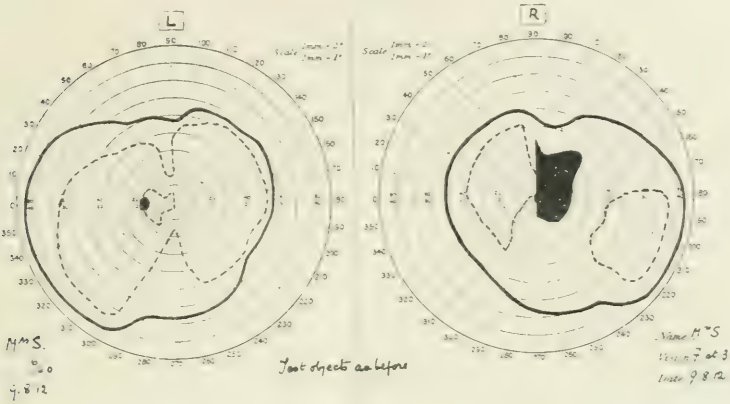
7th August.—The fields of vision were examined by Bjerrum's method, and symmetrical loss of the upper outer quadrants was found with a scotoma in each eye between the fixation point and the blind spot. The scotoma was larger and denser in the left eye.

9th August.—RV = counting figures at 3 metres, LV $\frac{6}{60}$.

Fields of vision (Fig. 6).—Note the similarity in type with Case I. (Figs. 3 and 4), especially in the right eye.

Acute suppuration of the right maxillary antrum, with signs of pus in the right middle meatus, was found by Dr. Fraser. The antrum was washed out, and next day the scotoma in the right eye was much smaller and the field somewhat enlarged.

Fig. 6.



10*th* and 11*th August*.—Fields of vision (Fig. 7).—Note especially in the right field the scotoma for $\frac{5}{300}$ white occupying the apex of the upper outer quadrant. The apex of the lower outer quadrant responds faintly to this test: that of the lower inner quadrant well to a 5 mm.

Fig. 7.

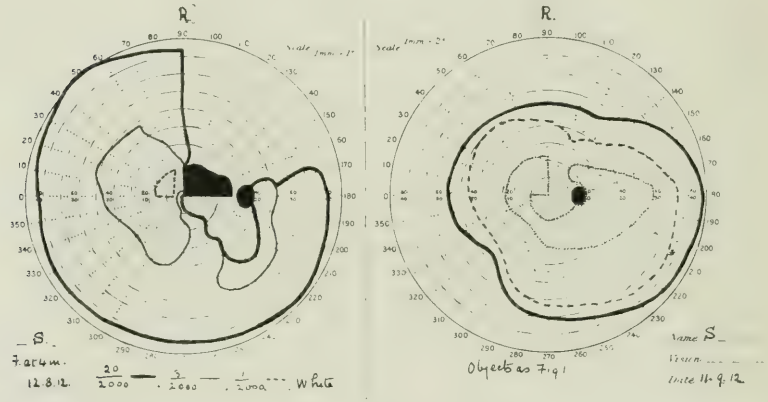
object, but not to a 1 mm. Red $\frac{1}{300}$ is faintly seen in the temporal island and in the lower nasal quadrant, brightly in the upper nasal quadrant. In the left field red $\frac{1}{300}$ is well seen in both nasal quadrants, less well in the lower outer quadrant, and dimly in the upper outer quadrant, especially near the vertical meridian. In the scotoma in this

field the part below the horizontal meridian was less dense than that above it. The intensity of the changes in the fields varied much from day to day, although the peripheral boundaries for $\frac{5}{300}$ white were never severely affected.

12*th August*.—The scotoma in the right eye is nearly as big as in Fig. 6. For $\frac{1}{300}$ white only the upper nasal quadrant and the temporal island, somewhat reduced, remain. The left field, however, is improved. Vision in both eyes much as on 9th.

Fig. 8, A, shows the field of the right eye by Bjerrum's method. Compare with Case I. (Fig. 2). The upper part of the scotoma (coloured black) was blind to $\frac{50}{2000}$ white, the remainder to $\frac{20}{2000}$. The progressive diminution of vision is well shown, the field for $\frac{1}{2000}$ white being represented by a small portion of the upper inner quadrant.

A FIG. 8. B



X-ray examination made at this time by Dr. Porter proved negative.

It was now proposed to explore the sphenoidal sinuses. The patient, however, refused operation, became hysterical after returning home, and went to bed for a fortnight.

24*th August*.—The condition was now much improved. RV = counting figures at 3 metres directly and $\frac{6}{60}$ excentrically, LV = $\frac{6}{36}$ +. Both optic discs now showed definite pallor. The fields showed practically no lesion for white. The left eye showed a temporal hemiopic scotoma for red $\frac{10}{300}$, the right a similar condition, but more pronounced and affecting the apex of the lower nasal quadrant also (see Fig. 8, B). For green $\frac{10}{300}$ the right field showed complete temporal hemiopia.

11*th September*.—V = $\frac{6}{12}$ in each eye. Partial optic atrophy in each eye. Fields for white practically normal. Fig. 8, B, shows the field of the right eye. Note the scotoma for red $\frac{10}{300}$ opening to periphery.

upwards and affecting the apices of three quadrants. The improvement continued, and when last seen in February 1913 vision was $\frac{6}{9}$, and by Bjerrum's method relative bitemporal hemiopia could still be detected, with a small scotoma just to the outer side of the fixation point in the right field. There is still post-nasal discharge, but the bilious attacks are less frequent.

This case apparently depended upon some inflammatory condition of the nasal sinuses, probably the sphenoidal, although this was not proved. Similar field changes have been reported by Grönholm,[10] and Albrand's case[8] may have been of this nature. It occurred after influenza, and the fields were of the type under consideration.

The rapid variation in the size and intensity of the scotoma is noteworthy. This is in accordance with the observations of others on scotoma of post-nasal origin. For a time blue vision was present, followed by yellow vision during recovery.

In the two cases the same general type and development of the visual defects occurred. The scotomata broke through to the periphery first upwards along the temporal side of the middle line and then downwards in the same position, the periphery dipping in to meet these extensions as they developed. Thus in the first stage the temporal field consisted of a hook-shaped or uncinate area extending from the lower quadrant of the nasal field outwards and upwards outside and over the blind spot. After separation from the lower nasal quadrant this area formed a vertically oblong temporal island, slightly obliquely disposed, outside the blind spot and mainly occupying the lower temporal quadrant. This island then became diminished, at first from above, then from below also, the part just below the horizontal meridian remaining last.

Before the changes in the temporal field became fully developed, failure of the lower nasal quadrant began to appear along its mesial border, while its apex began to be encroached upon in the same direction by the scotoma. The loss thus occurs from above down in the temporal field, from below up in the nasal field, and progresses round the fixation point clockwise in the right field and counter-clockwise in the left. In this respect the scotoma behaves in the same way as the general field.

The retention of normal peripheral boundaries for $\frac{5}{300}$ white in the presence of well-marked changes for colour and small white objects indicates the active nature of the process, and also the necessity for the use of several tests, while the recovery of areas which had been quite blind for as long as five or six months, as in

Case I., shows that even total abrogation of function for a considerable period by no means indicates destruction of the nerve fibres. These points have also been noted by other observers.

By using test objects of different sizes the scotoma may be shown to be composed of areas, separated by vertical and horizontal straight lines intersecting at the fixation point, and thus corresponding to the apices of the affected quadrants, in which the defect diminishes in the same order as it does in the quadrants of the field as a whole. This feature seems to distinguish this form of scotoma from others, such as that of tobacco amblyopia, which may offer a superficial resemblance.

It is noteworthy that, after the papillomacular bundle, the fibres first affected are those terminating near the vertical meridian in juxtaposition to the unaffected uncrossed fibres. These fibres fail all along the nasal side of the meridian before those passing to more internal parts of the nasal retina are severely affected.

The regular sequence of the defect is in accordance with recorded charts, which frequently show survival of the upper inner quadrants to the last, though I have not found this point specifically referred to by any author. That the scotoma should behave in the same way is to be expected in view of the observations of Wilbrand[6] and Rönne,[7] and others. Until these observations have been confirmed and extended it would be premature to attempt any definite explanation of these points, which may, however, in the future be of some use in elucidating the anatomical and pathological problems of the subject.

The *Non-scotomatous type of bitemporal hemiopia* was present in the following cases:—

Case III.—Miss A. H., aged 33, has had acromegaly since she was about 20. The general appearance of the disease is very well marked. Her present complaint is difficulty in reading and sewing. The vision is nearly $\frac{6}{6}$ in each eye after correction for hypermetropia and astigmatism. Both optic discs are slightly pale, the left rather more than the right.

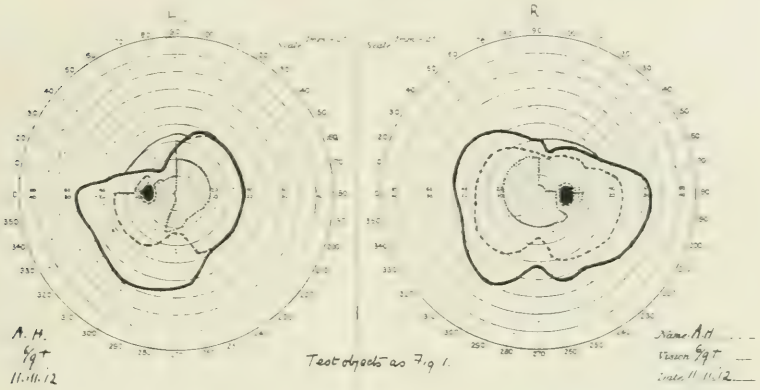
In 1906 bitemporal hemiopia had been observed, vision being $\frac{6}{6}$ at that time.

11*th November* 1912, *Field of Vision* (Fig. 9 *).—Note the absence of implication of the macular region. While the hemiopia is only present for colour, the fields for white $\frac{5}{300}$ show considerable affection, that is to say, the discrepancy between the white and the colour fields

* In this and the following figure the upper outer areas enclosed by a thin line are areas in which functional response to the test employed was nearly, but not absolutely, absent.

is less marked. In neither eye could a complete lower outer quadrant loss be found for even the smallest coloured objects, and these results were confirmed by Bjerrum's method. These features indicate a stationary or very slowly progressing lesion.

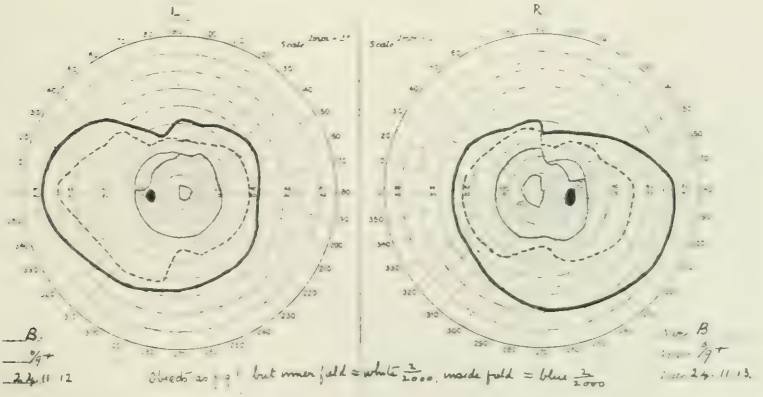
Fig. 9.



Case IV.—Miss B., aged 54, gave a history of enlargement of the feet and hands for two years. Her features presented the usual signs of acromegaly, but only to a slight degree. The sella turcica is a little enlarged and deepened.

Her present complaint is pains in the legs. She was referred by

Fig. 10.



Dr. Gulland to Dr. Sym, who kindly allowed me to test her fields. Vision was nearly $\frac{6}{9}$ in each eye after correction for astigmatism.

Fields of Vision (Fig. 10), *24th November* 1912.—The fields are slightly indented above over the upper outer quadrants. By Bjerrum's method the outer part of each upper outer quadrant was found to

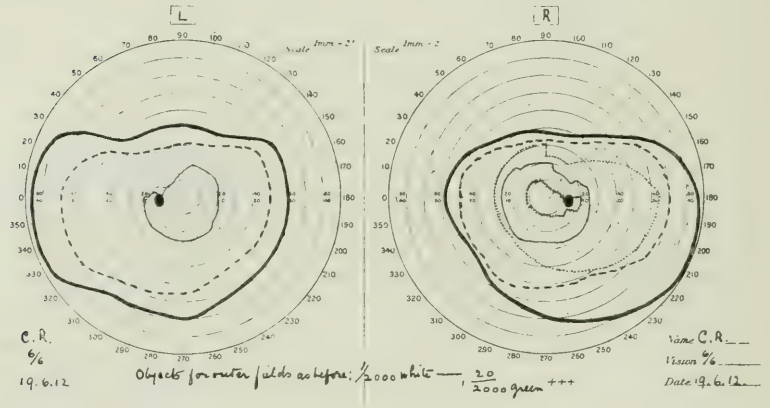
respond very doubtfully to $\frac{2}{2000}$ white (the areas are shown enclosed by thin lines), while with $\frac{2}{2000}$ blue hemiopic fields were found. On another occasion Dr. Sym found a definite temporal hemiopia in the left eye with $\frac{10}{2000}$ red.

Case V.—*11th June* 1912. Miss C. R., aged 34. This patient presents the appearances of acromegaly to a moderate degree. The sella turcica is enlarged and deepened. She complains of having had headaches for two or three years. She has had hæmorrhoids for eight years. Menstruation is stated to be regular.

RV = $\frac{6}{6}$, LV with −0·75 D.Sph. = $\frac{6}{6}$. The optic discs are slightly hyperæmic.

Fields of Vision, *19th June* 1912 (Fig. 11).—There is nothing of importance in the fields for $\frac{5}{300}$ and $\frac{1}{300}$ white; that for $\frac{10}{300}$ red in the

Fig. 11.



right eye shows a definite indentation. The fields for $\frac{1}{2000}$ white show definite signs of upper outer quadrant loss, also that for $\frac{20}{2000}$ green in the right eye. No test showed definite loss in the lower outer quadrants.

Case VI.—An elderly lady of about 60 years, whose fields I was enabled to examine through the kindness of Mr. Berry. She had had headaches and had noticed the visible signs of acromegaly in 1898, and in 1900 consulted a physician, who told her that the condition at that time had already existed for some years.

January 1913.—The appearances of acromegaly are obvious and well marked, but not extreme. Vision, after correction for myopia, RE = $\frac{6}{12}$; LE = $\frac{6}{9}$. The optic discs show no pathological changes.

Fields of Vision.—At 300 mm. the fields showed some flattening above, but no definite signs of hemiopia were elicited with white or colour tests.

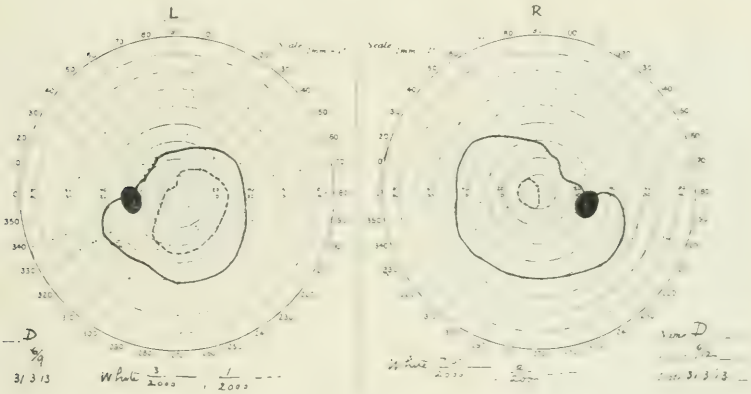
By Bjerrum's method (Fig. 12), *March* 1913, characteristic fields

were at once forthcoming with $\frac{5}{2000}$ and $\frac{3}{2000}$ white in the right eye and smaller objects in the left.

In these four cases it will be noticed that the changes are more developed in the older cases, III. and VI., than in the more recent cases, IV. and V.

Case III. shows a fairly obvious condition of partial bitemporal hemiopia, detectable with the ordinary perimeter and a coloured test of the usual size. The others, however, show defects requiring Bjerrum's method for their demonstration, defects which, though slight, are quite definite and of the same type in all the cases. Changes for colour in these cases were never markedly in advance of those for white, as in Cases I. and II., indicating

FIG. 12.



a slowly progressing lesion. Two of the cases were examined after some months, and showed only trivial alterations.

These cases fall into Cushing's Group III., in which gland symptoms predominate, while neighbourhood symptoms are inconspicuous or absent. That the visual symptoms are inconspicuous may be admitted; good vision is a feature of this class of case; their absence, however, depends upon the method of examination. The cases of acromegaly in this group recorded by Cushing had normal fields together with enlargement of the sella turcica. Uhthoff's statistics [3] also give field changes in about 50 per cent. of cases of acromegaly, and cases are frequently recorded in which enlargement of the sella turcica and normal fields were associated. In the four cases described and two others which I have been able to examine up to the present, changes of the type illustrated have been present in all. It seems, therefore, certain that changes

in the visual fields are present in a very much larger number of acromegalics than present statistics show, and this is especially to be expected where the sella turcica is enlarged.

Another feature, which depends largely on the size of the test object used, is the presence of typical bitemporal hemiopia with fields bounded outwards by a vertical meridian. While this condition may be relatively uncommon for any one given size of object, it will be more often demonstrated if a series of objects is tried until a suitable size is found.

Similarly in regard to the scotomatous type of field, the use of a series of objects will probably greatly increase the number of such cases, and in all cases where central vision is definitely reduced, even though not greatly, an explanation should be sought in this direction.

That the fields in Cases I. and II. are not merely isolated instances, but members of a type, is suggested by a study of recorded charts, many of which show similar conditions in one or other stages. The cases of Albrand,[8] De Lapersonne and Cantonnet,[9] Grönholm,[10] Story,[11] Werner,[12] and others, show these indications, and the same may be said of several fields in Cushing's classic work. It is noticeable that the lesions in connection with these cases were always of a relatively more active nature than those which produce fields of the non-scotomatous type. Cases I. and II. show also that when the activity subsides the field becomes non-scotomatous (left field of both cases), unless actual atrophy has occurred.

Where the cause of the scotomatous type is not a tumour recovery usually occurs in a comparatively short time with or without some degree of permanent damage to sight. These cases usually depend upon some inflammatory disturbance such as sphenoidal cell disease or basal syphilis. On the other hand, where a tumour is present, as has already been mentioned, it is usually of a more actively growing nature. Where this field is associated with acromegaly the course has often been more acute, and in two of the six cases I have found in the literature a tumour described as a sarcoma was found post-mortem (Gubler,[13] Pontoppidan [14]).

The prognosis in cases of acromegaly with the scotomatous type of field would therefore appear to be rather worse than when the non-scotomatous type is present. Since some cases of bitemporal hemiopia of the scotomatous type are associated with tumours while others are not, it is evident that the main factor in the pro-

duction of this type of field is neither pressure nor traction, but some condition common to inflammatory conditions in the chiasmal region and tumours of an active type. This is probably congestion and œdema of the structures in relation to the chiasma, a view put forward by Fuchs[15] in 1895. At the same time it is not suggested that other factors have no influence; undoubtedly in some cases, probably in Case I., both pressure and congestion were acting together in varying proportions at different times. It seems not improbable that if observations of this kind are made in a number of cases it may be possible in the future to classify such fields in types according to the predominance of one or other causal factor.

The exact nature of the lesion of the nerve fibres which causes the scotoma is still not thoroughly established. Clinically the condition is allied to what is known as retrobulbar neuritis, and may be considered a chiasmal retrobulbar neuritis. The functional obstruction is quite evidently, as Cushing points out, a physiological blockage rather than a destruction of the nerve fibres, and the power of recovery of areas which have been blind for months is characteristic of the type. In this respect these cases of chiasmal affection come into close relationship with cases of retrobulbar neuritis dependent upon post-nasal sinus disease, which are characterised by rapid variations in the intensity and size of the central scotoma or other visual defect present. Such cases are ascribed by many, Birsch-Hirschfeld,[16] de Kleijn,[17] and others, to toxic influences dependent on local vascular or lymphatic congestion.

The circular course of the defect, clockwise in the right field, counter-clockwise in the left, no doubt depends upon the arrangement of the nerve fibres in the chiasma. These are known to open out in broad loops so that the crossed bundle is spread over practically the whole chiasma while the uncrossed fibres extend inwards to varying degrees.[18,19] Thus it is possible that the uncrossed bundle may be affected while the crossed bundle is still partly intact, while the affection of the lower inner quadrant of the field third in sequence may be due to the fibres of the uncrossed bundle, which pass to the upper outer retinal quadrant, being those which are looped farthest inwards. In the present state of our knowledge, however, it would be premature to offer any definite explanation of this feature.

Conclusion.—The main points illustrated by this study may be summarised as follows :—

1. Bitemporal hemiopia is much more common than present statistics show.

2. The frequency with which it is found depends upon the method of examination used.

3. The use of small objects and of Bjerrum's method is essential.

4. There are two chief types of bitemporal hemiopia.

5. The scotomatous type is characterised by early loss of direct vision. Typical cases show regular progression of the defect around the fixation point. This field is associated with active lesions, or lesions active during the presence of the scotoma.

6. The non-scotomatous type is associated with good vision for a long time.

The field changes occur slowly, affecting the quadrants in the same sequence, the defect diminishing in intensity from periphery to centre.

I gladly express my indebtedness to Mr. Berry, Dr. George Mackay, Dr. Sym, and Dr. Gulland for allowing me to examine four of the cases.

LITERATURE. — The following list includes only the more important of many papers and books consulted.

A. *Referred to in Text.*

[1] Sinclair, *Trans. Oph. Soc. U.K.*, 1905, vol. xxv. p. 384. [2] Rönne, *Klin. Monatsbl. f. Augenheilk.*, 1911, Bd. xlix. S. 154; *Ibid.*, 1909, Bd. i. S. 12. [3] Uhthoff, *Græfe-Saemisch. Handbuch*, 2te Aufl., Bd. xi. Abt. 2*a*. [4] Cushing, *The Pituitary Body and its Disorders*, 1912. [5] Pick, *Deutsch. med. Woch.*, 1911, S. 1931 *et seq.* [6] Wilbrand and Saenger, *Neurologie des Auges*, Bd. iii. Abt. 2. [7] Rönne, *Klin. Monatsbl. f. Augenheilk.*, October 1912, S. 446. [8] Albrand, *Berl. klin. Woch.*, 1892, S. 896. [9] De Lapersonne et Cantonnet, *Arch. d'Ophtalmol.*, 1910, tom. xxx. p. 65. [10] Grönholm, *Zeitschr. f. Augenheilk.*, 1910, S. 311. [11] Story, *Trans. Oph. Soc. U.K.*, 1891, vol. xi. p. 196. [12] Werner, *Ibid.*, vol. xxxii. p. 267. [13] Gubler, *Correspond.-bl. f. Schweiz. Aerzte.*, 15th December 1900, No. 24. [14] Pontoppidan, *Hospitalstid.* December 1897, No. 40, ref. De Schweinitz, No. 24, and Bartels, No. 26. [15] Fuchs, *Brit. Med. Journ.*, 1895, vol. ii. p. 949. [16] Birsch-Hirschfeld, *Archiv. f. Ophth.*, 1907, Bd. lxv. S. 440. [17] A. de Kleijn, *Ibid.*, Bd. lxxv. S. 3. [18] Déjerine, *Anatomie des Centres Nerveux*, Paris, 1901, [19] Pichler, *Augenärztliche Unterrichtstafeln*, Heft xxii., Breslau, 1900.

B. *Not referred to in Text.*

[20] Nettleship, *Trans. Oph. Soc. U.K.*, 1897, vol. xvii. p. 277. [21] Bogatsch, *Klin. Monatsbl. f. Augenheilk.*, August 1912, S. 136. [22] Fisher, *Trans. Oph. Soc. U.K.*, 1911, vol. xxxi. p. 51. [23] Rönne, *Klin. Monatsbl. f. Augenheilk.*, 1910, Bd. ii. S. 455. [24] De Schweinitz and Holloway, *Journ. Amer. Med. Assoc.*, 1912, vol. lix. p. 1041. [25] Lenz, *Klin. Monatsbl. f. Augenheilk.*, 1905, Beilageheft, S. 263. [26] Bartels, *Zeitschr. f. Augenheilk.*, 1906, Bd. xvi. S. 407. [27] De Schweinitz and Carpenter, *Journ. Amer. Med. Assoc.*, 1905, vol. xliv. p. 81. [28] Schnabel, *Zeitschr. f. Augenheilk.*, 1905, Bd. xiii. S. 7.

In many of these references extensive bibliographies are given.

ANTE-MORTEM THROMBOSIS IN THE RIGHT HEART AND PULMONARY ARTERIES AS A CAUSE OF DEATH IN LOBAR PNEUMONIA.

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It requires some courage to discuss a proposition of which Professor W. H. Welsh[1] writes, "The sixteenth century error of mistaking for ante-mortem coagula the firm yellowish-white cardiac clots intimately intertwined with the columnæ carneæ, and found after death from pneumonia more frequently than from any other disease, has not wholly disappeared at the end of the nineteenth century, for coagulation of blood in the right heart is still occasionally spoken of as a special danger in pneumonia."

Years ago, when pathologist to the Royal Infirmary here, I was struck by the uniformity with which clotting occurred in the right heart and the larger pulmonary arteries in pneumonia, and seeing a case during life in which I ventured to diagnose—and, it happened, correctly—such ante-mortem clotting, I examined the heart and pulmonary arteries in all cases of pneumonia which came under my observation in the pathological department. Dr. D. A. Welsh, now Professor of Pathology in Sydney University, carried out similar observations, and I am indebted to him for permission to refer to some of his cases in the statistics I offer later.

To make my paper and premises of argument clear I must refer at the outset to two points.

I am designating as ante-mortem blood-clot the firm opaque fibrin clots found in the right heart in certain cases of croupous pneumonia. They may arise in the right auricle or ventricle: they are attached fairly firmly to such structures as the musculi pectinati of the right auricle, the chordæ tendineæ of the tricuspid valve, and the columnæ carneæ of the wall of the right ventricle, and they extend through the pulmonary orifice, the clot generally having moulded on it, if it be extensive, the impression of the pulmonary cusps, and they may reach into the quite small branches of the pulmonary artery. These clots are not adherent to the pulmonary arterial wall, and they often show some coloured and obviously post-mortem clot associated. I do not include the thrombosis found along with endocarditis, myocardial inflammation or softening, and which everyone agrees occurs during life.

Coagulation of the blood is one of the most intricate problems of hæmatology, but is one of great practical importance, especially

if it can be established that the colourless clots just referred to are ante-mortem in formation.

Blood coagulates because fibrin threads are formed, and fibrinogen is converted into fibrin by the action of a ferment called thrombin.[2] Thrombin only appears in the blood when a nucleoproteid termed thrombokinase, derived from many varieties of cells, including disintegrating leucocytes, and possibly also from blood platelets, is brought into relationship with prothrombin and certain calcium salts. Prothrombin is intimately associated with fibrinogen. Prothrombin, fibrinogen, and the requisite calcium salts are present in the circulating blood normally, so that thrombokinase is the only additional element necessary to induce thrombosis. The presence of an anti-coagulating agent or ferment is more hypothetical though none the less necessary. Anti-thrombin is believed to counteract the coagulating tendencies of any excess of thrombin. Negative phase blood or blood which does not coagulate under ordinary conditions when coagulation should occur, may be due to (*a*) absence of fibrinogen, (*b*) absence of thrombokinase, or (*c*) the presence of anti-thrombin or some anti-coagulating ferment.

The frequency of colourless blood-clot in autopsies in cases of lobar pneumonia as distinct from cases of death due to other diseases.—In 61 cases of lobar pneumonia on which I performed the autopsy during my term as pathologist to the Royal Infirmary, I noted the kind of clot found in the heart and vessels, and abstracted from my reports such details as dilatation of the right heart and extent of the thrombosis in the pulmonary arteries. Of the 61 cases I found 39 showed ante-mortem clotting in the right auricle, right ventricle, and pulmonary arteries, and of these 39, in 16 the clot was adherent and large in amount, while in the remaining 23 it was mostly colourless but not adherent.

Of the balance of the 61 autopsies, in 22 cases 9 showed only coloured clot in the right heart, and in 13 there was fluid blood with little or no clot of any kind. In most of the cases noted as showing adherent colourless clot in large amount there was a small amount of similar clot in the left heart.

By Professor D. A. Welsh's permission I abstracted in a similar way details of clotting in 25 cases of croupous pneumonia in which he performed the autopsy. In 19 of these there was clot in the right auricle, right ventricle, and pulmonary arteries, and in 16 this was noted as being largely ante-mortem clot, while in 6 cases of the 25 there was no clot, or only very slight clotting.

In 3 of the 16 cases in which ante-mortem clotting was noted the clots were described as being "specially adherent."

By way of contrast I examined 160 consecutive cases in the post-mortem rooms, eliminating those in which there was lobar pneumonia, and found ante-mortem or colourless clotting in only 20. Of the 20, one was a case of acute nephritis and pyelitis in which the lungs were healthy but in which extreme ante-mortem clotting had occurred, one was a case of carcinoma of the cæcum and one a case of cirrhosis of the liver, while the remaining 17 were cases either of broncho-pneumonia or of suppurative conditions. In the majority of these 20 cases most of the clot was coloured, and only a small proportion was decolourised.

Colourless clot is common in croupous pneumonia, my series showing 39 out of 61 cases, and in 16 the clot was more or less adherent. Professor Welsh's series shows 16 out of 25 cases. In other diseases it is rarely found after death, although it may occur in broncho-pneumonia, particularly if septic in nature, in cases of suppuration, and sometimes in leucocythæmia. (No case of this disease was included in the 160 autopsies referred to above.)

Question of whether the thrombosis in croupous pneumonia is generally agonal or may not in a larger number of cases than is generally supposed be present for hours or even days before death.—In a valuable paper by Martin and Rennie which I read soon after it was published in the *Lancet* in 1899, and from which I received some inspiration, the writers controvert the very widely-held view that colourless clot may form after death. It is easy to suppose that clot non-adherent to any heart structure may form in process of dying or after death, although why this should so often be colourless in croupous pneumonia and so rarely be so in other diseases it is hard to imagine, but it seems incredible that fibrinous clot, beginning either in auricle or ventricle, and firmly attached or entangled around some structure such as the chordæ tendineæ, should extend through the pulmonary orifice and even reach the quite small branches of the pulmonary arteries, and all this develop at or immediately after death. The very essence of fibrinous non-coloured clot seems to depend on its formation during the circulation of the blood, and when we remember that the blood in croupous pneumonia is specially rich in fibrin and that leucocytes in the blood generally, and in the lung in particular, supply the necessary thrombokinase, there is, to my mind, less difficulty in accepting the theory of ante-mortem cardiac thrombosis. Another factor which, according to Wiener,

greatly aids thrombosis, is the presence of a great excess of CO_2 in the circulation should a large area of lung be inhibited from action.

In my post-mortem experience the branches of the pulmonary artery of the affected lung are more generally filled with non-adherent colourless clot than those of the unaffected lung, but the clot always extends from the heart in the cases to which I am alluding, and does not commence in the vessels of the affected lung.

The fact that in a proportion of cases there is no such thrombosis found after death, and that all our pneumonia patients do not die of ante-mortem blood clotting, must depend on a sufficient production of anti-fibrin ferment or anti-thrombin, because it seems probable that the leucocytes present in excess, as they generally are, must always determine a sufficient supply of thrombokinase provided they are in a degenerated condition.

Professor D. A. Welsh[3] suggests that the leucocyte destruction going on in the lung in pneumonia may mean a large increase of thrombokinase in the lymph, which reaches the thoracic duct and eventually the right heart, and that the same excess would be present in any inflammatory condition in which there was much local cell destruction. The differences in pneumonia are, of course, the increased amount of carbonic acid gas and the high fibrin content of the blood.

I have noted that colourless clot is often associated with commencing breaking down of the pneumonic area in the lung.

There is no reason why life should not be still possible with the gradual development of ante-mortem thrombosis, although there must of necessity be an ever-increasing embarrassment of the circulation.

Can this more protracted ante-mortem thrombosis be recognised clinically?—The most obvious signs of such thrombosis occurring during life are increased engorgement of the jugular veins in the neck, associated with gradual weakening, and later disappearance of the second sound at the pulmonary area. It may be urged that these signs merely indicate a failing right heart from pulmonary difficulties. My experience is that when death is occurring in croupous pneumonia, and is due to an engorged and failing right heart, then ante-mortem thrombosis is almost an inevitable sequel or, more correctly, associated condition. In every one of my post-mortem cases in which there was extensive ante-mortem clotting

Axillo-mammary Dermoid. (Specimen lent by Dr. Courtie.)

in the right ventricle and pulmonary arteries there was marked dilatation of the right heart.

I invariably keep a careful watch upon the veins in the neck, and the slightest engorgement indicates the need of increased stimulation. Equally important I believe is the second sound in the pulmonary area. In every lung affection in which there is interference with the pumping action of the right ventricle the second sound in the pulmonary area is accentuated. A gradual failure in many cases of heart and lung disease means failure of the right ventricle to pump its blood into an engorged lung, but a gradual failure of the second sound in a case of croupous pneumonia has, I believe, a more sinister import, namely, that thrombosis has begun, and that the thrombus is mechanically interfering with the closure of the pulmonary valves. Such clotting will no doubt be greatly expedited by the gradual failure of the circulation just before death, but, in my opinion, the process begins in a percentage of cases hours, or even possibly days, before death.

I have followed to the post-mortem room 5 cases of croupous pneumonia in which I had ventured to diagnose such ante-mortem clotting by the signs just mentioned, and in all there was extensive and adherent colourless clot in the right heart and in the pulmonary arteries. In all there was a fairly high leucocyte count varying from 25 to 60,000 leucocytes in the c.mm. of blood.

Explanation of these cases as suggested by post-mortem and other observations.—This has already been inferred. The thrombokinase derived probably from disintegrating leucocytes is the factor needed to induce thrombosis, provided there is no excess of anti-thrombin present to inhibit the process.

It is often urged that venous thrombosis ought to be common in croupous pneumonia if ante-mortem cardiac thrombosis is of such frequent occurrence, while we know venous thrombosis is rare in pneumonia. It is as an attempted answer to this argument that I have laid stress on the dilated right auricle and ventricle in the cases of marked colourless blood-clotting which I have investigated in the post-mortem room. Dilatation may not by itself be a sufficient reason, but a dilated chamber is surely far more apt to be the site of thrombosis—granted the excess of fibrin in the blood—than a smooth-walled vein, and in the vein there are no chordæ tendineæ, musculi pectinati, auricular appendix, or columnæ carneæ.

Another point is that in some of the autopsy cases of lobar

pneumonia in which no blood-clotting had occurred I was able to verify the statement made by Professor D. A. Welsh that there was in these cases a very low leucocyte count, while in all the cases which I saw during life, and in which the clinical evidences of ante-mortem clotting were supported by post-mortem examination, there was a relatively high leucocytosis. In several of these cases I thought the polymorphonuclear leucocytes showed signs of disintegration.

Clinical value of early recognition.—If there is a danger of cardiac and pulmonary thrombosis, then stimulation, particularly of the heart, should be the routine treatment for all cases in which such thrombosis may be expected to occur.

1. Every case of croupous pneumonia should be treated early, and I believe continuously, by the administration of a direct cardiac tonic, such as digitalis or strophanthus.

2. Such diffusible stimulants as spirit of chloroform and aromatic spirit of ammonia should be given *at once* if the heart shows any signs of difficulty.

3. Oxygen may counteract the excess of CO_2, which, according to Wiener and others, aids clotting.

4. It might be wise to depart from the usual plan of preventing any change of posture of the patient in bed. In fact, altering the position of the patient may be actually beneficial.

5. The use of anti-thrombin ferment would be ideal, but at present it is not within the scope of practical therapeutics. Citric acid in 30 to 60-grain doses four-hourly has been much commended in cases of venous thrombosis, and Sir A. E. Wright supports this method of treatment. Addis has, however, demonstrated its futility in a small series of cases.[4]

6. If we are convinced that ante-mortem clotting is a cause of death in pneumonia, bleeding should never be performed unless in particularly robust patients, and never for what looks like engorgement of a dilated right heart. It may only aid thrombosis which has already begun. Auscultation of the pulmonary area should in any case be first carefully carried out.

References.—[1] Clifford Allbutt, *A System of Medicine*, 2nd ed., vol. vi. p. 730, London, 1910. [2] Mellanby, *Journ. Physiol.*, 1909, p. 28. [3] *Journ. Path.*, vol. xv. [4] *Brit. Med. Journ.*, 1909, vol. i. p. 999.

DUODENAL DIVERTICULA AND DUPLICATURE OF THE DUODENAL WALL.*

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DUODENAL DIVERTICULA, although not of frequent occurrence, cannot be looked upon as anatomical rarities. In the literature there are records of only 68 cases, but no deductions can be drawn from this, as such diverticula are very easily overlooked unless a special watch be kept for them.

In the great majority of the recorded cases their presence was not suspected during life, they were in no way connected with the death of the patient, and were first disclosed in the course of the autopsy. It is worthy of note that they have been found for the most part in the bodies of elderly people; in 83 per cent. of the recorded cases the patient was over fifty years of age, and out of 26 cases there were 17 males and 9 females.

The second part of the duodenum is the most frequent site. In 44 cases analysed by Buschi (1911)[1] the first part of the duodenum was involved in 6 cases, the second part in 33, the third part in 3, whilst in 2 cases diverticula were present in both the first and second parts of the duodenum. In the second part of the duodenum the favourite site is in the region of the papilla of Vater or near the opening of the duct of Santorini. So frequently do they occur in the immediate vicinity of the papilla that French writers have introduced the name "*diverticules périvateriens.*"

The rule is to find but one diverticulum: there may, however, be four or five in the same case. Buschi, in an analysis of 51 cases, found 35 cases with one diverticulum, 13 with two diverticula, and 2 cases with four and 2 with five diverticula. Sometimes the pouches are found symmetrically arranged, one on either side of the termination of the common bile duct; such cases have been recorded by Keith (1910)[2] and Rolleston and Fenton (1901).[3] In size they vary within wide limits, some being no larger than a hemp seed, whilst others may be the size of a hen's egg.

In shape the sac is usually spherical: not infrequently, however, it is ovoid, or like the finger of a glove. The relative size of

* From the Pathological Department of the Edinburgh Royal Infirmary.

the opening of the sac into the duodenum is quite inconstant; in some it is narrower, in others wider, than the cavity of the sac. In one or two cases a valve-like fold has been noted guarding the opening of the diverticulum. As a rule the sac has been found empty and relaxed; in some instances, however, it was filled with fluid or food.

The sac usually springs from the postero-internal aspect of the duodenum, and thus lies in contact with the head of the pancreas, which it indents; a layer of loose areolar tissue, however, is always found between the sac wall and the capsule of the pancreas. The bile duct and the pancreatic ducts usually run behind the diverticulum.

As to the anatomical structure of the sac wall all writers are agreed. In the vast majority of cases only mucous membrane and submucosa take part in forming the wall, the muscular coats being absent, either stopping abruptly at the neck of the sac in the form of a ring or, in a few cases, tailing off gradually over the proximal part of the sac.

The mucous membrane lining the sac is thin, devoid of folds, and possesses no Brunner's glands, though Lieberkühn's crypts may be present. The muscularis mucosæ is usually well developed and may be hypertrophied.

Such are the facts regarding duodenal diverticula which I have gleaned from the literature. A striking feature of the published cases is the absence of any associated or secondary pathological changes in the diverticula or in adjacent structures. We are accustomed to associate diverticula with liability to pathological processes, and when we are dealing with such deformities situated in immediate relationship to the hepato-pancreatico-duodenal angle, we would almost expect to find occasionally secondary effects of a serious nature.

It is therefore of interest that in the two cases of diverticulum of the second part of the duodenum recently published by Bauer (1912),[4] and in two of the three cases which I have met with, the diverticula were associated with grave disturbances in adjacent organs. In one of Bauer's cases two large diverticula which were filled with soft solid material pressed on and obstructed the duodenum and led to severe gastric disturbance, which eventually proved fatal. In the other case, associated with the presence of a diverticulum filled with feculent semi-solid matter, there was acute duodenal catarrh, swelling of the papilla of Vater, some dilatation of the bile ducts, and jaundice.

Diverticula of the Second Part of the Duodenum.

The following three cases I have personally encountered:—

Case I. was that of a man, æt. 58, who was admitted to the Royal Infirmary, Edinburgh, suffering from urgent abdominal symptoms. He had been seized with abdominal pain fifteen hours previously, and when seen was in a very collapsed condition and could give but little history, except that he had suffered for some time from dyspeptic trouble. The man died one hour after admission to hospital.

Autopsy.—On opening the abdomen a considerable quantity of blood-stained exudate escaped. Numerous typical little areas of fat necrosis were at once visible in the great omentum; they were still more marked, however, in the gastro-hepatic omentum and in the immediate neighbourhood of the pancreas. The tissues around the pancreas were swollen and œdematous and, in places, infiltrated with blood. On cutting into the pancreas several large areas of hæmorrhage and necrosis were seen in the body of the organ.

The gall-bladder was thick-walled, distended with viscid dark orange-coloured bile, and contained numerous small dark-brown calculi the size of millet seeds. The cystic duct contained several similar calculi, but was not obstructed. The common bile duct was slightly dilated, and contained one or two small calculi. On passing a probe down the duct it entered the duodenum without encountering obstruction. It was noted, however, that the duct seemed to be longer and more tortuous than usual in the lower part of its course behind the duodenum. On opening the duodenum the mucous membrane was seen to be coated with tenacious mucus. The first portion of the duodenum showed no abnormality: in the second portion, however, there was present in marked degree a curious condition of infolding of the duodenal wall (Fig. 1). At the upper part of this portion the mucous membrane projected about half an inch into the lumen of the gut round its entire circumference, causing a marked narrowing of the lumen at this point. On examining more closely it was seen that this invagination of the wall involved not only the mucous membrane but also all the other coats of the bowel, and, moreover, that it could not be undone, but was fixed by the fascia-like envelope of the duodenum. About two inches below this infolding was a second one of similar nature, but not completely encircling the gut. A third fold running in a vertical direction on the posterior wall of the second part of the duodenum, in the long axis of the gut, projected for half an inch into its lumen. This fold could not be flattened out, but on section it was seen to consist only of mucous membrane and submucosa and not to include the muscular coats. The papilla of Vater was situated just to the right of the mid-part of this fold. Above the upper circular fold a small flattened gall-stone was found lying free in the duodenum. At

the inner side of the duodenum, about one inch above the papilla and just above the upper duplicature of the duodenal wall, there was an opening which admitted the thumb and which led into a sac filled with tenacious mucus. When the latter was cleared out the sac was found to be of considerable size, measuring one and a half inches across, and near its apex being divided into two by a prominent ridge. The sac had a capacity of 15 c.c., and had a lining of mucous membrane which was smooth and entirely devoid of folds. On dissecting it from the outside it was found to be in front of the head of the pancreas with which it lay in contact. It could readily be stripped from the pancreas, a layer of loose areolar tissue intervening between the two.

The wall of the sac was very thin and transparent, and to the naked eye appeared to consist merely of attenuated mucous membrane. Microscopic sections of the wall confirmed this view, as, except in the region immediately adjoining the neck of the sac, where a few muscular fibres were present, the two muscular coats were altogether absent. The mucous membrane was about half the normal thickness. Few crypts of Lieberkühn and no Brunner's glands could be seen. The muscularis mucosæ was no thicker than normal, and the submucous coat was represented by the loose fibrous capsule of the sac. At several places in this loose submucous coat there were flattened masses of pancreatic tissue. Except that no islets of Langerhans were visible, these areas showed the structure of normal pancreas. They were situated in the wall of the duodenum in the position usually occupied by Brunner's glands, and were clearly portions of accessory pancreatic tissue.

Examination of the true pancreas showed that its ducts were slightly dilated, but no definite obstruction of their lumina was discernable. Microscopic sections of the pancreas showed the changes associated with hæmorrhagic pancreatitis, but special staining for micro-organisms failed to reveal any in the pancreatic tissue.

Case II. was that of a woman, æt. 47, who died from sudden heart failure. She was known to be suffering from fatty heart and cirrhosis of the liver, and had a large irreducible ventral hernia.

Autopsy.—An extreme degree of hepatic cirrhosis was present, the liver being barely a third of its natural size and weight. The gall-bladder was distended and very thick-walled, and contained dark viscid bile and four large mulberry-like calculi. The common duct was dilated, its walls thickened, but there was no obstruction of its lumen. In the first part of the duodenum, on the postero-superior wall, half an inch beyond the pylorus, there was a large ulcer one and a half inches in length and half an inch in breadth, with its long axis running transversely round the gut. On the second part of the duodenum, immediately to the outer side of the papilla of Vater, an opening admitting the forefinger led into a diverticulum one inch in length, running upwards behind the duodenum on the outer side of the common bile duct (Fig. 2). This sac, which

FIG. 1.

Congenital bilocular diverticulum of the duodenum along with duplicature of the duodenal wall. Note the hæmorrhagic pancreatitis, fat necrosis in the gastro-hepatic omentum, and gall-stones.

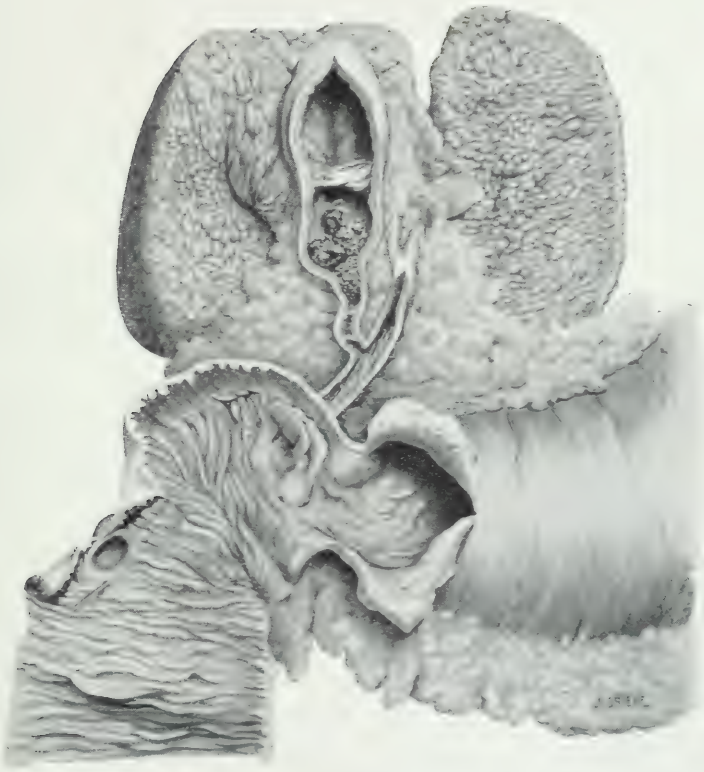

FIG. 2.

"*Diverticule periviterien*," associated with large ulcer in first part of duodenum, chronic cholecystitis and gall-stones, and advanced hepatic cirrhosis.

FIG. 3.

"*Diverticula perforativa*," along with ulceration in stomach and first part of duodenum.

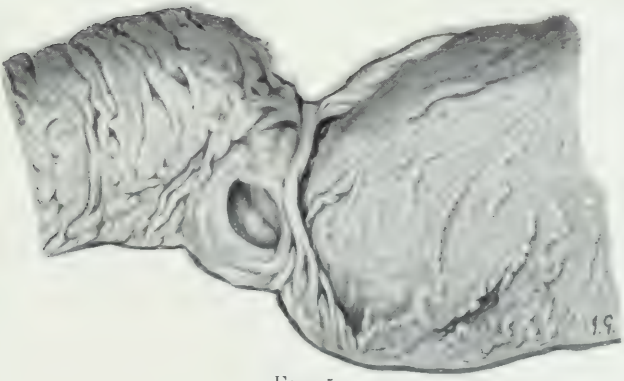

FIG. 5.

Wide-mouthed diverticulum of the duodenal vestibule.

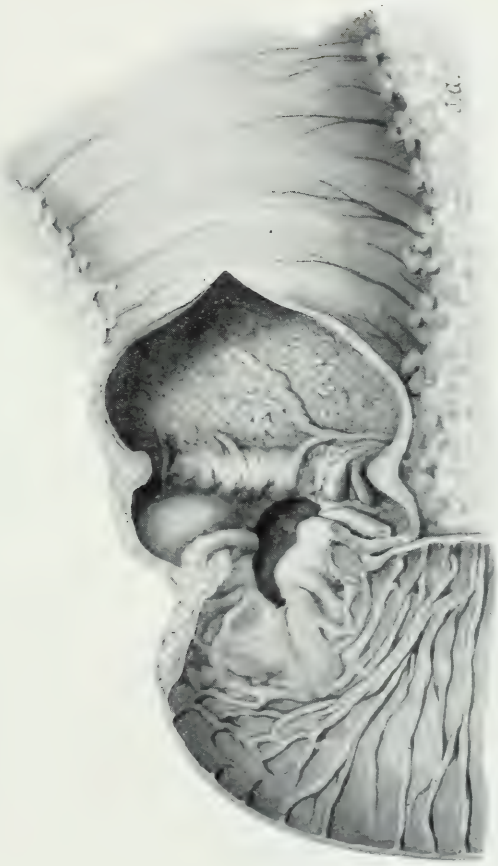

FIG. 4.

Ulcer-divercnlum of first part of duodenum.

in shape resembled the finger of a glove, had very thin walls, consisting merely of mucous membrane and a thin submucous coat. No evidence of accessory pancreatic tissue could be made out. The diverticulum was empty, and though it lay in close contact with the lower end of the common bile duct, at the time of the examination there was no direct evidence that it had interfered with the biliary outflow.

Case III. was that of a man, æt. 56, who died suddenly from a large cerebral hæmorrhage. He had previously been in good health, and had never complained of any abdominal symptoms.

Autopsy.—On opening the stomach and duodenum several ulcers were displayed. One of these, situated on the lesser curvature of the stomach, was a chronic ulcer with rolled edges, as were also two others involving the posterior wall of the first portion of the duodenum. Close to the chronic ulcer there were two small acute ones in the stomach. In the second part of the duodenum, in its posterior wall, there was an opening half an inch in diameter, which led into a cavity of some size, extending downwards for half an inch and upwards for one inch behind the duodenal wall. On passing a probe down the slightly dilated common bile duct it emerged in the duodenum, just on the inner margin of the aperture of the diverticulum (Fig. 3). The latter had very thin walls, devoid of muscular coats, and lined by smooth mucous membrane. The duodenum did not appear dilated, and there was no evidence of visceroptosis.

The first of these three cases is of interest in that a large duodenal diverticulum with an accessory pancreas in its wall occurred along with the curious condition of duplicature of the duodenal wall.

In the other two cases—typical "*diverticules péricatériens*"—there was no evidence of pancreatic tissue in the walls of the diverticula, nor, on the other hand, was there any sign of distension or dilatation of the duodenum.

In two of these cases, though one could not say with certainty that the diverticula were responsible for the biliary and pancreatic troubles, yet the presence in each of a diverticulum in close anatomical contiguity with the common bile duct, together with the signs of stasis in that duct, without there being any intrinsic obstruction of its lumen, offered strong presumptive evidence that there was some such etiological relationship. It is possible that in both cases the stagnation of duodenal content in the diverticula led to a chronic catarrh of the duodenum, and that swelling of the papilla accounted in part for the biliary stasis.

Etiology.—The diverticula which we have been discussing are, according to the accepted classification of Wendriksy and Schweder,

false diverticula, and as such are generally considered to be acquired, being the result either of pressure from within or of traction from without.

Keith has suggested that pressure of the third part of the duodenum by the superior mesenteric vessels, as occurs in the subjects of visceroptosis, may lead to sufficient intra-duodenal pressure to produce diverticula at points where the musculature of the duodenum is weak. As far back as 1815 Fleishmann [5] maintained that diverticula in the region of the papilla of Vater are predisposed to by the separation of the muscle fibres of the duodenal wall where the bile duct penetrates it. In some of the recorded cases, however, there were two diverticula, one near the papilla and another at some distance from it, and it is only logical to assume the same reason for the origin of both. Moreover, the observations of Letulle (1898)[6] and Nattan-Larrier (1899)[7] all point to the fact that the arrangement of muscular fibres in the duodenal wall around the entrance of the bile and pancreatic ducts is such as to make this region, if anything, stronger than the rest of the duodenal wall. Buschi (1911)[1] further asserts that of all parts of the intestinal canal the duodenum is the one least subject to pressure from within, and states in support of this view that diverticula are never developed at the site of a duodenal ulcer. As will later be shown, however, this statement requires qualification. The strongest argument against intra-duodenal pressure as the primary cause of these diverticula is the fact that many of them occur on the left wall of the duodenum where it is supported by the pancreas, which organ is not infrequently indented by the sac.

In my first case, where there was marked evidence of duodenal stasis, and where the diverticulum arose from the duodenum just above a stenosis caused by a duplicature of the duodenal wall, the element of pressure undoubtedly entered, and in all probability accounted for the size of the diverticulum. The position, the relations, and the structure of the sac, however, left no doubt that it was primarily congenital.

Very few facts have been brought forward in favour of traction from without as a cause of duodenal diverticula. Keith (1903)[8] suggested that traction on the duodenal wall by the common bile duct might produce a diverticulum in cases of visceroptosis; the funnel-shaped diverticulum so produced with the papilla of Vater at its apex is, however, totally different from those under discussion. Traction from atrophy of the pancreas, as was suggested by Roth (1872),[9] cannot be regarded as a cause, for not only have no duo-

denal diverticula been found in the most marked cases of pancreatic atrophy, but the recorded diverticula, which bore a relation to the pancreas, have been separated from that organ by loose areolar tissue, and have in many cases indented the pancreatic tissue. Traction by scar tissue or lymphatic glands may be excluded as causes. In only one recorded case, that of Harley (1857),[10] has there been any indication that such an etiological factor existed. On the other hand there is a strong body of evidence in favour of the theory of congenital origin for these diverticula. The following facts may be brought forward in support of this theory :—

1. The duodenum in the course of normal development gives off the hepatic and pancreatic buds; consequently developmental anomalies might be expected to occur more frequently in this than in other regions of the intestinal tract. Tandler (1902)[11] found that congenital atresia occurs in the duodenum 39·6 times as frequently as in any other segment of small intestine of equal length.

2. The observations of Lewis and Thyng (1908)[12 13] showed that during early fœtal life diverticula are often met with in the upper reaches of the small intestine, particularly in the duodenum.

3. An accessory pancreas is occasionally observed in or on the wall of such a diverticulum. This condition was present in one of the cases here recorded.

4. The case reported by Shaw, where in a new-born infant there was found both a diverticulum and a congenital occlusion of duodenum.

5. In the cases recorded by Letulle (1898)[6] and by Falconer (1907)[14] congenital diverticula of the œsophagus and stomach respectively accompanied the duodenal diverticula.

6. Many of these diverticula abut on and even indent the head of the pancreas.

Tandler's observations on the early stages of the development of the duodenum show that the epithelial lining of the gut develops in advance of the meso-dermal coats. The outgrowth of an accessory epithelial bud in the region of the hepatic and the two pancreatic ones at this early stage might result in a diverticulum with an imperfect meso-dermal sheath. This would explain the absence or imperfection of the muscular coats so typically found in duodenal diverticula.

The mere fact that in a certain number of cases there is definite evidence of duodenal stasis is no proof against the theory of congenital origin of duodenal diverticula. Such thin-walled congenital

diverticula would be liable to distension and enlargement, with rises in intra-duodenal pressure, and in the course of years what was originally a minute diverticulum might eventually become a sac of considerable dimensions. In the subjects of visceroptosis with a tendency to duodenal stasis this would be a very probable contingency. On these grounds we can readily explain why duodenal diverticula have been noted for the most part in elderly people; in younger subjects they, though present, have been so small that they escaped notice.

Diverticula of the third part of the duodenum are undoubtedly rare. The cases recorded by Gandy (1900)[15] and by Jackson (1908)[16] were almost certainly of congenital origin.

Diverticula of the Duodenal Vestibule.

Diverticula of the congenital type are much less frequent in the first than they are in the second part of the duodenum. Buschi found, among 44 recorded cases of duodenal diverticula, 6 involving the first part. These cases were probably all of the congenital type; the one recorded by Falconer (1907)[14] was certainly so. Marie (1899)[17] believes that the congenital diverticula met with at this part are analogous to those present in the duodenum of fish and known as "appendices pyloriques."

I have met with two other varieties of diverticula, however, in the duodenal vestibule, neither of which would appear to be so rare. The one variety is that due to chronic duodenal ulcer; it is found almost exclusively in the roof of the duodenum within one inch of the pylorus. In such cases the wall of the sac is formed of dense fibrous adhesions, the wall of the duodenum having been completely destroyed by ulceration. I have come across three well-marked examples of this variety; in one of them a secondary perforation of the wall of the diverticulum had occurred and led to fatal peritonitis. Fig. 4 represents a diverticulum of this type. The case was that of a man, æt. 21, who for two years had suffered continuously from symptoms of chronic duodenal ulcer and latterly from those of duodenal stenosis. Death was due to pneumonia. When the abdomen was opened at the autopsy a markedly dilated stomach with leathery hypertrophied walls was exposed. This was associated with a very pronounced stenosis of the duodenum, one inch beyond the pylorus. Above the first part of the duodenum, proximal to the stenosed area, there was a firm swelling matted in adhesions, and on opening the duodenum this was seen to be the thickened adventitious wall of an ulcer-

diverticulum. In this case the duodenal wall, weakened by ulceration, had given way under the pressure exerted by the hypertrophied stomach to drive food through the stenosis.

The other type of diverticulum which I have encountered in the duodenal vestibule is one situated close to the pylorus, usually at the lower border or floor of the duodenum, but occasionally in the upper part or roof. This variety is not associated with ulceration, and all the coats of the duodenum are represented in the wall of the sac. Such a diverticulum is usually shallow and wide-mouthed; its wall is somewhat thinner than that of the adjoining duodenum, and this would appear to be due to a stretching of the muscular coats. A shallow diverticulum of this type is represented in Fig. 5.

F. C. Turner (1884)[18] reported three cases of pouching of the first part of the duodenum. In two of these cases the pouches appear to have been of the same nature as those which I have described. Cole (1912),[19] in his radiological studies of the duodenum, has shown how the duodenal vestibule normally bulges out both in its floor and roof when filled from the stomach, so much so that it overhangs the pylorus, giving in the radiogram an appearance resembling a hood. This appearance Cole has described as the "duodenal cap." At operations for duodenal ulcer, where cicatrisation and narrowing of the duodenum at a point about one inch from the pylorus is found, a pouching out of the floor of the duodenal vestibule in the form of a sac is almost invariably seen, indicating that this is its weakest and least supported part. These wide-mouthed diverticula of the first part of the duodenum are therefore, in all probability, acquired protrusions of a portion of the duodenal wall in situations where a certain degree of saccula-tion normally occurs, and where the wall is naturally weak and poorly supported.

Duplicature of the Duodenal Wall.

By this term I would designate a condition of infolding of the wall of the duodenum, usually in the form of ring-like constrictions, but sometimes in the shape of linear folds in the long axis of the gut. This condition may occur in any part of the duodenum, but in its most pronounced form in the first and second portions. Viewed from the interior there is seen at certain areas a marked valve-like projection of the mucosa into the lumen of the bowel, and this, occurring as it usually does round the circumference of the gut, gives rise to a considerable narrowing of the passage.

On closer inspection it is seen that the doubling-in involves all the coats of the duodenum, and the contiguous parts of the outer muscular coat at the indented area are bound together by loose fibrous tissue. The duodenal wall appears to be redundant and altogether too large for its enveloping sheath. In the same cases there are as a rule one or more infoldings involving only the mucous and submucous coats; the characteristic feature of these folds is that they cannot be flattened out.

I have met with three well-marked examples of this deformity in the bodies of adults in the post-mortem room. The condition I believe to be a congenital one, and that for the following reasons:—

1. In one case the duplicature was associated with a diverticulum of the duodenum of undoubted congenital origin (see Fig. 1).

2. In the bodies of still-born infants I have on several occasions met with a similar condition, the only difference being that the duplicature could be undone after stripping the peritoneum and fascia-like covering from off the duodenum.

3. In the *Transactions of the Pathological Society of London* there are records of three cases of a duodenal abnormality which would appear to be of a similar nature to that which I have described.

Buchanan (1861)[20] reported the case of a child, æt. 18 months, who died of convulsions. At the post-mortem there was found in the duodenum, just above the entrance of the bile duct, a septum consisting of mucous membrane and muscular tissue, with a central aperture 2 to 5 mm. in diameter. The stomach and the duodenum above this obstructing septum were much dilated and hypertrophied. There had been no symptoms until three weeks before death, when attacks of vomiting had set in.

Moore (1884)[21] reported the case of a man, æt. 40, in whose intestine at the duodeno-jejunal junction there was a stricture "caused by an internal ring of mucous membrane which admitted the tip of the little finger—obviously a variety in development." In addition there were three diverticula in the upper part of the jejunum. These intestinal abnormalities had caused no symptoms.

Silcock (1885)[22] reported the case of a woman, æt. 34, who died of carcinoma of the ascending colon. In the duodenum, six inches below the pylorus, there was a septum, with an aperture barely admitting the tip of the little finger. At one point in the septum there was a small pouch projecting like the finger of a

glove into the lumen of the gut below. No details regarding the structure of this septum are given.

4. In the early stages of the development of the duodenum Tandler (1902) has shown that there are solid ridges of epithelium projecting into the lumen of the gut; the mesoblastic coats grow into these ridges, forming folds, both circular and longitudinal, in the duodenal wall. A failure of the duodenum to expand and unfold in the later stages of its development would explain this abnormality.

Conclusions.—1. Diverticula of the second and third parts of the duodenum are of congenital origin.

2. In the first part of the duodenum three types of diverticula are met with, the congenital, the ulcer diverticulum, and the acquired wide-mouthed diverticulum of the duodenal vestibule.

3. Congenital duplicature of the duodenal wall may occur either along with or independently of diverticula; it is probably due to the persistence of a condition normally found at an early period of fœtal life, and is in fact but a mild degree of that arrest of development which in its most pronounced form is met with in cases of congenital atresia of the duodenum.

References.—[1] Buschi, *Virchow's Arch.*, 1911, Bd. ccvi. S. 121. [2] Keith, *Brit. Med. Journ.*, London, 1910, vol. i. p. 376. [3] Rolleston and Fenton, *Journ. of Anat.*, London, 1901, vol. xxxv. p. 110. [4] Bauer, *Wien. klin. Woch.*, 1912, No. 23, S. 879. [5] Fleishmann, *Leichenöffnungen*, Erlangen, 1815. [6] Letulle, *Bull. Soc. Anat.*, Paris, 1898, tom. lxxiii. p. 758. [7] Nattan-Larrier, *Bull. Soc. Anat.*, Paris, 1899, tom. lxxiv. p. 987. [8] Keith, *Lancet*, London, 1903, vol. i. p. 639. [9] Roth, *Virchow's Arch.*, 1872, Bd. lvi. S. 197. [10] Harley, *Trans. of the Path. Soc. of London*, 1857, vol. viii., cited by Buschi, *Virchow's Arch.*, 1911, Bd. ccvi. S. 121. [11] Tandler, *Morphol. Jahrb.*, Leipzig, 1902, Bd. xxix. S. 187. [12] Lewis and Thyng, *Amer. Journ. of Anat.*, Baltimore, 1908, vol. vii. p. 505. [13] Thyng, *Ibid.*, 1908, vol. vii. p. 489. [14] Falconer, *Lancet*, London, 1907, vol. i. p. 1296. [15] Gandy, *Bull. Soc. Anat.*, Paris, 1900, tom. lxxiv. p. 691. [16] Jackson, *Journ. of Anat.*, London, 1908, vol. iii., 3rd series, p. 219. [17] Marie, *Bull. Soc. Anat.*, Paris, 1899, tom. lxxiv. p. 982. [18] F. C. Turner, *Trans. Path. Soc.*, London, 1884, vol. xxxv. p. 200. [19] Cole, *Journ. of Amer. Med. Assoc.*, Chicago, 1912, vol. lix. p. 1947. [20] Buchanan, *Trans. Path. Soc.*, London, 1861, vol. xii. p. 121. [21] Moore, *Ibid.*, 1884, vol. xxxv. p. 202. [22] Silcock, *Ibid.*, 1885, vol. xxxvi. p. 207.

SOME RARE UTERINE NEW GROWTHS* — SIMPLE PAPILLOMA OF CORPUS UTERI, PRIMARY TUBERCLE OF CERVIX, DIFFUSE NODULAR FIBROSIS.

By F. W. N. HAULTAIN, M.D., F.R.C.P.

I VENTURE to bring before you shortly a record of three uterine new growths which, from their rarity, will, I trust, justify their special description:—

CASE I.—*Simple Papilloma of Corpus Uteri.*—The first is an example of diffuse papilloma of the uterine mucosa which I met with in a patient, aged 59, who gave the following history:—She had one child at the age of 30, and ceased menstruating at the age of 45. Two years later she had a slight return of uterine hæmorrhage of an irregular nature, with intervals usually of eight to ten weeks, though occasionally much less. At no time was the bleeding excessive or alarming till a few weeks before I saw her in October last. Still, for many years she had felt weak, easily tired, and in poor condition generally.

On examination the cervix felt atrophied and the body of the uterus small—cavity 2½ inches—and movable. As is my routine practice in all cases of post-climacteric hæmorrhage, I strongly recommended an exploratory curettage. This revealed the lining of the uterus to be spongy, soft, and fairly vascular, and the microscopic examination of the scrapings showed a typical simple papillomatous structure. Never having seen, or indeed read of, an exactly similar condition, and taking into consideration the simple nature of the new growth, I confidently expected the cure of the bleeding.

Instead of this, however, hæmorrhage recurred in the course of a few weeks, so I decided to remove the uterus. On examination it showed a diffuse hypertrophy of the mucosa, with no tendency to infiltration of the muscular wall, and very slight enlargement of the organ generally. The microscope revealed the same typical papillomatous structure of the thickened lining. The branching outgrowths were supported by definite fibrous connective-tissue stroma, covered by a single layer of columnar epithelium (Fig. 1).

The naked-eye appearances are similar to those of fungous endometritis, but the microscopic appearances of the stroma are essentially different. The stellate corpuscles of the former, with their anastomosing processes and small-celled infiltration, are

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replaced by distinct fibrous connective tissue. Its development after the menopause, giving rise to haemorrhage, is sufficient to differentiate it clinically. So far as the literature is concerned, I have been able to find one similar case mentioned by Bland-Sutton, for which he removed the uterus from a woman aged 83.

A few of the text-books refer to uterine papilloma in a general way. In the majority of instances one finds these to be instances of epitheliomata, or polypoidal cervical growths.

It may be assumed that simple papilloma may develop malignant properties and be the initial stage of corporeal cancer. In the case described, however, no such tendency was apparent, though clinical evidence of its presence (as shown by post-climacteric haemorrhage) was demonstrated over a period of twelve years.

An interesting transitional case offering appearances of the benign variety, but at the same time infiltrating the muscular wall, is described by Routh.[1] In this instance the basis of each villus, which was covered by a single layer of columnar epithelium, was formed by a capillary loop, with a mere trace of cellular tissue. It was thus much more embryonic in its nature than the case I have described.

Case II.—*Primary Tuberculosis of Cervix Uteri.*—The second case I met with 16 years ago. An unmarried woman, aged 35, had suffered for several months from severe leucorrhœa and increasing weakness; her menstruation was normal in type, though scanty in amount. As she was a *virgo intacta* I decided to examine her under an anæsthetic, and to my surprise found the cervix showed marked changes of which I had no previous experience.

To touch the surface was rough and irregular, but not friable and haemorrhagic as in malignant conditions. On inspection it was seen to be of a purple colour and covered with numerous papillæ, bathed in a thick yellowish discharge, and when the latter was removed the entire cervix gave the appearance of a large bramble. The body of the uterus was normal in size and quite movable.

As I was quite unable to determine the nature of the change in the cervix, I removed a small portion for examination, which gave evidence of tubercle. I therefore decided to remove it, which I did by the high supravaginal method of amputation.

At the time of the operation I had the appearances drawn and painted (Fig. 3). On examination microscopically, the tissue of the cervix was found infiltrated with numerous tuber-

cular foci, mainly disposed towards the vaginal aspect, and in no way involving the mucosa lining the canal (Fig. 2).

The connective tissue throughout showed a high degree of small-celled infiltration, and as there was no appearance of granular or necrotic degeneration, it may be inferred that the disease was in an early stage of development. The giant cells were large and typical, and after examining many sections I succeeded in finding several tubercle bacilli (Fig. 4).

It is beyond me to think how the condition had developed in this situation, as careful examination failed to show a trace of evidence of tubercle elsewhere, while the possibility of direct infection is negatived by reason of the patient being a *virgo intacta*. After the removal of the cervix there was an uninterrupted and complete recovery, and the patient is still enjoying the best of health after sixteen years.

Only a few cases of primary infection of the cervix have been recorded, and in none can I find the detection of the tubercle bacillus. Perhaps the most interesting are those described by Lebouleve, Cornil, and Lewers, though there are others by Horrocks and Brook. The diagnosis from carcinoma of the cervix must at all times be extremely difficult, as in advanced cases there is a tendency to necrosis, and hæmorrhage on examination. As regards treatment, should there be no evidence of tubercle elsewhere, complete removal of the diseased organ is probably always indicated. Though I only performed a supravaginal amputation, I feel I was fortunate in obtaining such a good result, and would on a future occasion recommend complete hysterectomy.

Case III.—*Diffuse Nodular Fibrosis of the Uterus.*—The third rare variety of uterine new growth to which I should like to draw attention might aptly be designated "diffuse nodular fibrosis." Of this I have met with two examples in an experience of over 700 hysterectomies for uterine fibromyomata. The pathological change consists in the formation of innumerable small fibroid nodules, varying in size from a pin's head to a hazel nut. Between the nodules there appears to be little muscular tissue to form a capsule as in ordinary fibromyomata, yet each nodule forms a distinct fibrous entity, entirely distinct from those immediately surrounding it, which clearly differentiates the condition from an ordinary diffuse fibrous thickening or chronic hyperplastic metritis.

In both cases the disease seems to have developed initially immediately beneath the mucosa, and gradually but uniformly

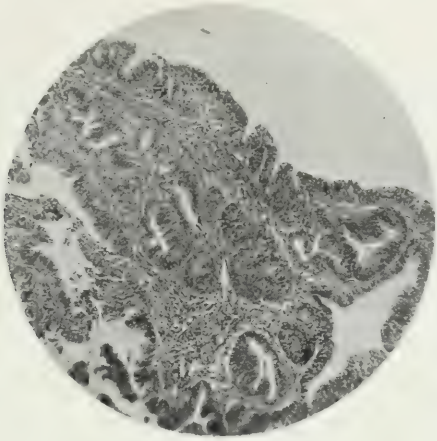

Fig. 1.

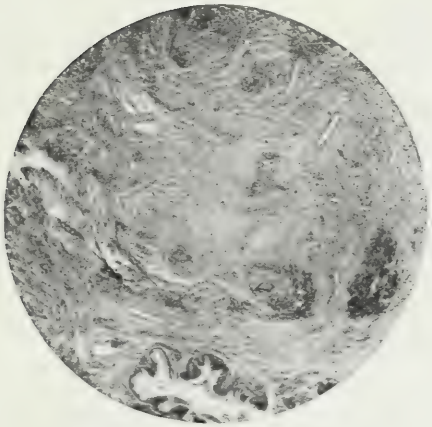

Fig. 2.

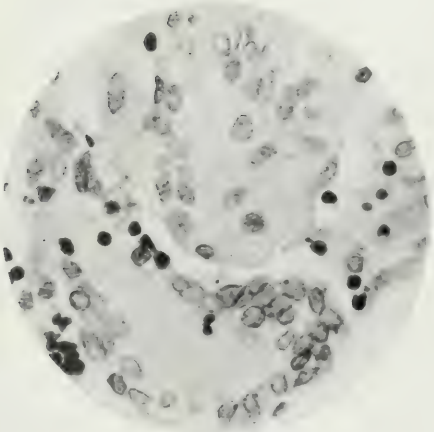

Fig. 4.

O.E.

thickened the uterine wall. The entire mass was encapsulated by a distinct layer of uterine muscle, which maintained the normal shape of the organ and preserved its smooth contour.

The uterine cavity, on the other hand, was beset with innumerable nodules in a more or less advanced stage of extrusion, in some instances forming polypi, and in others mere sessile projections. In the first case, which I have already published in Clifford Allbutt and Playfair's *Gynæcology*, the woman was a multipara, aged 38, who complained of increased blood loss during menstruation for the last twelve years. There had been no violent bleedings, but from gradually increasing anæmia the patient was weakened and unfit for work. The uterus was the size of a six months' pregnancy.

The second patient was but 21 years old, and complained of severe dysmenorrhœa and general debility, which was due to anæmia, though she herself did not consider the blood loss excessive during her periods.

The appearances of the second case offer an exact replica of those of the first, only in an earlier stage of development, the encapsulating muscular coat being thicker and less infiltrated.

What the origin of the change may be is difficult to determine, but it would almost appear as if it was the result of some irritation from the mucosa, possibly infective. It, however, must be considered more a general disease of the uterus when compared with the individual fibromyomata so commonly met with.

In bringing these rare cases under your notice I trust I have made no excessive claim on your indulgence, but I felt from their rarity and interest they were worthy of more detailed description than merely to be shown as specimens.

Reference.—[1] Routh, *Obstet. Trans.*, London, vol. xxxix. p. 5.

CONDUCTION DEFECTS IN THE HEART.*

By G. D. MATHEWSON, M.B., M.R.C.P.E.

Those who have had the opportunity of employing the string galvanometer in the examination of the heart are sometimes asked whether the method, in addition to its undoubted scientific interest, yields any information having a direct bearing upon the problems of diagnosis, prognosis, and treatment.

It must be admitted that in many cases no further knowledge is obtained by its use than can be derived from ordinary methods of examination. At the same time it may fairly be claimed for it that in some cases no other method affords such precise and con-

* Edinburgh Medico-Chirurgical Society, 2nd July 1913.

vincing evidence of the presence and nature of abnormalities in the heart's action. One class of case in which the method is of value is that in which there exists a defect in the conducting tissue of the heart, the auriculo-ventricular bundle and its branches.

In every case of cardiac disease it is of the greatest importance to ascertain as fully as is possible what the condition of the heart muscle is, for in a knowledge of this we have the most certain basis for prognosis and treatment.

Myocardial lesions frequently do not give rise to any striking or distinct physical signs, and therefore their recognition is not always so easy as is that of valvular lesions accompanied by characteristic murmurs.

A lesion in the auriculo-ventricular bundle is often only part of a more widespread myocardial change, and accordingly clear demonstration of any defect in conduction is often of importance in furnishing information as to the condition of the heart muscle as a whole.

When a lesion exists in the main stem of the bundle, the resulting condition of heart-block may be either partial or complete.

When the block is only a partial one, the effect varies with the degree of severity of the lesion. In the mildest cases the passage of stimuli from auricle to ventricle is not actually interrupted, the stimuli are merely delayed in transmission. The only effect is to produce a lengthening of the interval which normally exists between the auricular systole and that of the ventricle. It may be quite impossible to recognise this condition by ordinary clinical methods, while the interval can readily be measured in the electrocardiogram and any prolongation detected. In the case of a more serious defect the stimulus fails, occasionally or frequently, to pass over the bundle to the ventricles, and when this occurs a ventricular beat drops out, so that the pulse may present an occasional intermission, more frequently regularly recurring intermissions, or a rhythmic slow rate one-half or one-third of the auricular rate.

Fig. 2 illustrates such a case of partial heart-block, in which there is a failure of ventricular response to every other auricular contraction. The auricular contraction (P) occurs twice for each ventricular contraction (R and T). The diagnosis is often difficult in these incomplete forms of heart-block, and the electrical method is of great value in showing clearly the nature of the defect.

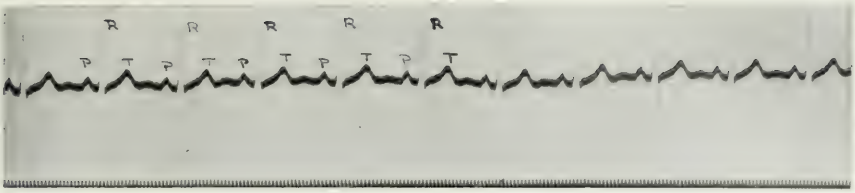

Fig. 1. Normal cardiac action.

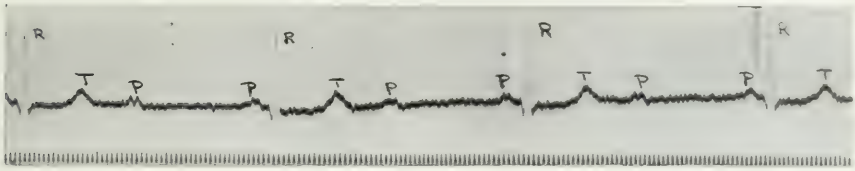

Fig. 2. Partial heart-block. 2 : 1 rhythm.

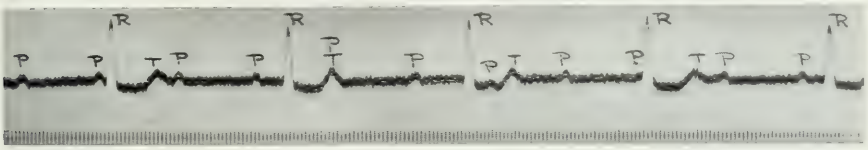

Fig. 3. Complete heart-block.
Time record, 28·57 per second.

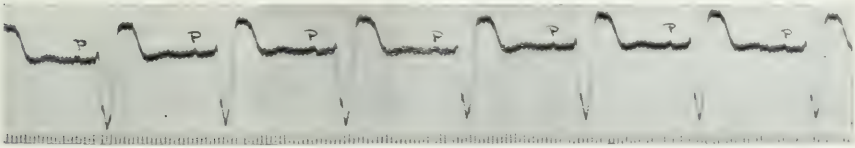

Fig. 4. Conduction defect in right branch of bundle. Abnormal ventricular complexes.

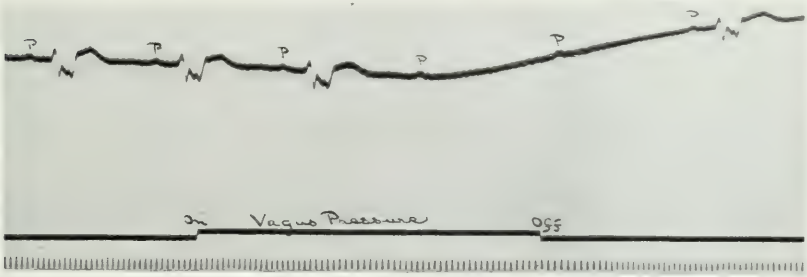

Fig. 5. Vagus stimulation produces block.

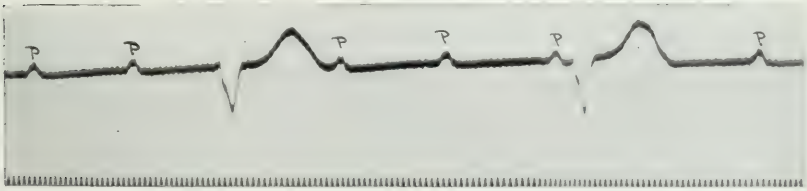

Fig. 6. Lesion of main stem and right branch of bundle.
Time record, 28·57 per second.

When complete heart-block is established, the transmission of stimuli from auricle to ventricle ceases entirely, and the ventricles become completely dissociated in their action from the auricles, assuming an independent rhythm of about thirty beats per minute. This condition of complete block may be recognised by ordinary clinical methods of observation, for it is unusual to have the ventricles beating regularly at so slow a rate in any other condition, and if the pulsations of the jugular veins are observed while the apex-beat is palpated, it may be noticed that the venous pulsation gives evidence of auricular contractions which are unaccompanied by ventricular action.

Fig. 3 shows the appearances in the electrocardiogram of a case of complete block. The auricular peaks (P) and the ventricular peaks (R and T) occur rhythmically, but the independence of the two rhythms is demonstrated by their constantly varying relation. At one point, P falls just before R, at another point, considerably in advance of it, while at two points in the tracing the auricular and ventricular contractions have coincided, the auricular peak becoming fused in the one case with the T peak, in the other with the R peak, of the ventricular contraction.

It is important to notice in Figs. 2 and 3 that, while the relations between auricular and ventricular action are more or less upset, the ventricular complex retains the form associated in Fig. 1 with normal action of the heart.

The cases of heart-block which have been referred to are produced by a lesion which involves the main stem of the auriculo-ventricular bundle, but it is possible for a lesion to occur which leaves the main stem of the bundle intact and affects only one of the two main branches into which the bundle divides for the supply of the two ventricles. So far as I am aware there is no clinical symptom or sign which betrays the presence of such a condition. For its recognition we depend entirely upon the use of the galvanometric method. The experimental work upon which the recognition of this condition has been based was carried out by Eppinger and Rothberger. They succeeded in dividing the right or the left branch of the bundle in the dog, and showed that this produced definite changes in the form of the electrocardiogram. The ventricular complex is altered, the R and T peaks being replaced by two broad deflexions from the base line in opposite directions.

Fig. 4 shows the electrocardiogram obtained from an elderly man, a patient in Dr. Russell's wards in the Royal Infirmary. In

this case there seems to be a lesion interfering with conduction in the right branch of the bundle. There is no defect of conductivity in the main stem of the bundle, for each auricular contraction is followed at the usual interval by the ventricular. The ventricular complex, however, is of abnormal form, consisting of two broad deflexions, and resembling that produced in the dog by section of the right branch.

It must be remembered that vagus stimulation is capable of producing a certain degree of heart-block. This can be excluded as the cause in many cases by giving a full dose of atropin and finding no change in the efficiency of conduction.

When a conduction defect exists in the heart, vagal stimulation may result in a further depression of conductivity, as is seen in Fig. 5, which was obtained from the same case as Fig. 4. Digital pressure over the vagus in the neck has here produced dropping out of some of the ventricular beats.

Fig. 6 shows the electrocardiogram obtained from a case in which there is complete block in the main stem of the bundle, with dissociation of the auricular and ventricular rhythms. In addition, the ventricular complex is of abnormal form, and suggests interference with conduction in the right branch also.

Some writers hold that the changes in the ventricular figure, here referred to a branch conduction defect, are really due to hypertrophy of one or other ventricle. Regarding this view it may at least be stated that in many cases in which there is hypertrophy affecting mainly one ventricle, those changes are not found in the electrocardiogram.

In one case I have seen transitions from one ventricular form to another, which seem more easily explained by a partial interference with conduction in the branches than by a varying preponderance in the muscular efficiency of the two ventricles.

The recognition of even minor degrees of conduction defect has a practical bearing upon treatment. It is found that such widely used drugs as digitalis and strophanthus tend to depress conductivity in the auriculo-ventricular bundle. They are therefore contra-indicated when any defect in conductivity already exists. Unfortunately no treatment is of avail in improving conductivity in most cases. The most hopeful are those in which the lesion affecting the bundle is a gumma. In these cases the use of anti-syphilitic remedies may result in restoration of conductivity.

I have, in conclusion, to acknowledge Dr. W. T. Ritchie's kindness in permitting me to make use of Figs. 3 and 6.

OBSTRUCTION OF THE BOWELS.*

By J. CRAWFORD RENTON, M.D.,
Surgeon and Lecturer on Clinical Surgery, Western Infirmary, Glasgow.

A good many years ago Sir William Gairdner asked me if I had ever seen a case of intestinal obstruction where operation had saved the patient. I was glad to be able to tell him of several cases in which operation had been successful. He was much interested to hear of cases of intussusception that had recovered, and also of bands constricting the bowel being divided with safety.

Thanks to medical practitioners sending cases much earlier for operation, the mortality in obstruction of the bowels, where operation has been performed early, is very much less as compared with what it was when cases were only submitted to operation after all medical remedies had been exhausted without effect and the patient looked, in the words of an old and experienced physician, "as if he was far beyond medical aid and there was only surgery to fall back upon," and even with that the chance of recovery was almost nil.

It is somewhat interesting to reflect upon how long it was before it was realised that the same symptoms which were produced by strangulated hernias, for which operation was promptly performed, were equally produced by an internal strangulation; and it was only after Lister's methods had demonstrated that the sanctity of the abdomen could safely be disturbed by laparotomy that internal strangulations were safely operated on.

Pain in the abdomen and vomiting, without any evidence of external hernia, if not promptly relieved by ordinary remedies, must be dealt with by operation. In recent years the subcutaneous injection of eserine salicylate and pituitary extract has helped us, more especially in elderly people, where a simple paralytic obstruction existed.

It is sometimes very difficult to say where the obstruction is. The point where the patient has pain when the obstruction is first complained of, or when there may have been a partial obstruction that had subsided, is a good indication as to where to open the abdomen. Spasm of the bowel recurring at short intervals must be regarded with suspicion. The following case is a good illustration:—A. B., aged 23, was sent to me by Dr. Duff of Wishaw with a history of pain in the right iliac region, with recurrent attacks

* A paper read at the Medico-Chirurgical Society, Glasgow

of slight obstruction. When I examined her there was only slight distension. She was quite definite in placing her finger three inches above the appendix line. On opening the abdomen I drew out the ascending colon with a broad band constricting it. This was divided and removed, and the patient made an excellent recovery.

In another case a patient in whom Dr. T. M. Fletcher was interested was operated on for an acute obstruction due to a band encircling a portion of the ileum close to the ileo-cæcal valve. A year afterwards he again had symptoms of obstruction, and on his abdomen being opened at the point where he complained of pain a coiled bowel, tightly constricted, was found. The constriction was divided, and he recovered. It was interesting to note at the second operation that a number of tubercular deposits which had been observed at the first operation had entirely disappeared. A fortnight after his second operation he was again seized with intestinal obstruction; the bowel was found to be gangrenous and a considerable portion had to be removed. He recovered from this and went home.

Another case illustrates intestinal obstruction associated with a gangrenous appendix. Ten days after the appendix was removed the patient had an attack of acute obstruction, due to a band in the lower end of the ileum. This was divided, and she recovered.

Three cases of obstruction due to Meckel's diverticulum have come under observation, and were operated on in my absence by Dr. Buchanan and Dr. Morton with complete success.

When no tumour is to be felt or seen in the rectum and sigmoid by the sigmoidoscope, or felt in the transverse or ascending colon, all the indication may be a partial distension of the small bowel, with possibly a ladder pattern on the abdomen. If such a condition exists we suspect an internal hernia or a constriction in the ileo-cæcal region. A case which illustrates the former very well occurred in a girl where an internal hernia had formed through the duodeno-jejunal fossa, congenitally enlarged. This was reduced after a good deal of difficulty, and the child recovered. Another case was operated on, but the patient died, no doubt from absorption.

In cases of intussusception, in addition to the usual symptoms, straining and passage of blood are very generally present, and a tumour is to be felt in the abdomen. If it is not clear where the obstruction is, an X-ray examination of the abdominal contents, in a quiescent period after a bismuth meal, sometimes gives great

assistance. A stricture may be recognised by a very tardy passage of the bismuth. The examinations require to be made every two hours in order to determine where the stricture is. In this way it is possible to localise a narrowing in the cæcum, ascending, transverse, or descending colon.

If the distension is not great, and there is hope of being able to remove the cause of the obstruction, the incision which gives the greatest amount of help is either one in the middle line or through the right rectus. From this latter incision the whole abdomen can be examined if the distension is not too great.

In cases of bands, when they can be easily divided it is better to do so, and then to make a tiny opening into the small bowel, having first gently pulled the coil outside the abdomen and protected the parts with gauze wrung out of saline solution. Having allowed the bowel to empty itself, the little opening is stitched up, washed, and the coil returned into the abdominal cavity. Tiny punctures may be made in several places if the distension is great. This method I have adopted with excellent results.

When the obstruction is very acute and the distension great, fæcal vomiting frequently occurs. With such a condition the patient is able to bear very little. The stomach ought to be washed out previous to an anæsthetic being given. In cases where the fæcal vomiting has been severe we have used spinal anæsthesia with stovaine, or local anæsthesia with cocaine and adrenalin. Ether is the best general anæsthetic in those cases. If the obstruction is known to be in the rectum or sigmoid, a colotomy is done in the usual way, bringing a portion of the descending colon or upper sigmoid through a small incision in the left iliac region. Some people advocate carrying it through the rectus, and I have been pleased with this method, but equally so with the plan of carrying it through the internal and external oblique muscles. If the obstruction is in the ascending colon, then a cæcostomy is necessary; and where it is possible, the method which Kader uses in the stomach can be applied in the cæcum. This makes a valve, and prevents the liquid fæces continually running out. Drainage through the appendix may also be used, attaching the appendix to the skin, then cutting off the tip of it, without interfering with its mesentery, and passing a rubber catheter through it into the cæcum.

Paul's tube is of great value in any part of the abdomen, and is very quickly applied. Sometimes the distension is so great that a Paul's tube is the only means by which relief can be obtained.

We should not attempt to do anything more than relieve the patient by drainage, and this ought to be continued for a fortnight or longer, until the patient is able to bear a radical operation. Moynihan's drainage tube has been of excellent service in relieving acute distension. The bowel is gently brought out, opened, and the tube inserted, and more and more bowel, as it empties, milked on to the tube. Sometimes no evacuation takes place through the Paul's tube, but one or two subcutaneous injections of eserine salicylate and pituitary extract induce contraction of the bowel and give relief. Recently a case of strangulated ventral hernia, in which the patient had been operated on twice before, was admitted and operated on. A foot of gangrenous bowel was found and was removed, a lateral union being carried out; but in order to ensure safe union, a Paul's tube was inserted into the small bowel, and drainage effected for ten days. Union was satisfactory, and the opening was closed, the patient making a good recovery. Since we adopted the method of continuous drainage for at least a fortnight in cases of obstruction the mortality has been very much less.

Having settled that the patient is able to bear a radical operation, if such is possible, and if the colotomy has been near the tumour, as, for example, in the descending colon, the tumour in the sigmoid, along with the colotomy opening, can be removed, and an end-to-end or side-to-side union carried out. This has given excellent results. Separation of the outer leaf of the colon enables one to remove much more of the bowel than could otherwise be done.

Malignant disease in the colon is fortunately so chronic, as a rule, that after being removed it is not so apt to recur as malignant disease elsewhere, nor are the glands so likely to be infected. A patient on whom I operated ten years ago is now quite well. Another case recurred in the bones of the pelvis five years after the enterectomy. Where, however, the tumour is so situated and so adherent that it cannot be removed, as, for example, in the ascending colon, the best operation, if the cæcostomy has sufficiently relieved the patient, is to divide the ileum, stitch up both ends, and then implant the proximal end laterally into the sigmoid. This leaves the tumour out of count and gives great relief to the patient. The cæcostomy should not be closed at the end of this operation, and may be used to wash out the colon, and gradually a very slight sinus remains. Where a tumour in the sigmoid or rectum cannot be removed, and where there has been obstruction,

a permanent colostomy is necessary. In some cases division of the sigmoid below the colotomy with closure of both ends has been tried, with a desire to delay the growth of the tumour in the lower sigmoid and rectum. This, however, has disappointed me.

In the last 33 cases of acute intestinal obstruction due to various causes there have been three deaths. This is encouraging, and shows that the earlier an obstruction is diagnosed and operated on, the better it is for the patient. There were five cases of intussusception sent early, and they all recovered. One case arrived very ill, and unwisely I operated. It is therefore plain that the important points to remember in connection with obstruction of the bowels are:—(1) Early diagnosis and early operation. (2) Where the obstruction is very acute, drainage by Paul's tube or the other methods which I have referred to. (3) The great importance of continuing drainage until the patient has sufficiently recovered to bear an operation, which may take three-quarters of an hour.

APPLIANCE FOR EXTENSION OF THE LIMB IN THE OPERATIVE TREATMENT OF FRACTURES.

By CHARLES W. CATHCART, F.R.C.S.

In cases where the surgeon decides to adjust the fragments of a broken bone, and wire or plate them together, forcible extension is, in most cases, a necessary part of the procedure. Considerable force is required, and when it is applied manually by assistants, the work is exhausting, and the degree of strain is not uniformly maintained throughout the operation. It occurred to me, while watching an operation of this kind, that a simple appliance might be made by which a surgeon could himself produce the necessary extension mechanically and have it maintained as required. It seemed, moreover, desirable to have a portable instrument, independent of any mechanism of the table or operating-room.

Counter-extension is easily obtained by the use of a crutch which bears upon the pelvis. The crutch forms a section of a wide iron ring, set at an angle to a strong iron bar. The lower end of the bar rises vertically at a right angle. Through the upper part of this vertical portion a horizontal rod is passed, ending in a hook attached by a swivel. The rod is screwed in its whole length, and a movable nut is fitted on to it. By the use of this nut the hook can be drawn away from the crutch. The nut has a double advantage. First of all it permits of the forcible turns being applied with supination of the right

hand in the production of extension. Had the supinating movement been applied to the screw itself it would have been driven from the operator. The second advantage is that the screw itself is not rotated, therefore there is less need for the swivel, although its presence is an advantage. It will be observed that the main stem is twisted on itself. The bar was found to bend slightly when great strain was put upon the instrument when in use. The half turn given to the central part of the bar brings its broader diameter into the plane in which the bend is liable to take place. This suggestion, as well as that for the adoption of the nut, was made to me by Mr. Hurford, the mechanician in Mr. Young's employment, who skilfully carried out all my preliminary experiments, and made the final pattern.

In one or two operations in which I have used the appliance it has worked very satisfactorily. The illustrations show its construction and also the mode of using it in a case where traction was being made on a fractured femur. The instrument acts equally well on either leg, and could be applied to the upper as easily as to the lower limb for any purpose in which a mechanical extension is necessary.

The appliance is made by Messrs. A. Young & Son, Edinburgh, and costs about 25s.

MEDICINE AND THE POETIC MUSE.

By JAMES YOUNG, M.D., Clifton.

THE relationship between those who practise the healing art and those who are endowed with the divine gift of poesy would not at first sight appear to be a close one. There is little enough of poetry in the life of those whose lot it is "to scorn delights and live laborious days" watching

> "The weariness, the fever, and the fret
> Here where men sit and hear each other groan,
> Where palsy shakes a few, sad, last gray hairs,
> Where youth grows pale, and spectre-thin, and dies;
> Where but to think is to be full of sorrow
> And leaden-ey'd despairs."

Yet was not Asclepius the Greek god of medicine, the son of Apollo, the god of song and poetry; and is it not therefore meet that amongst those who have practised the art of Asclepius there should be many who, in those "sessions of sweet silent thought" which are granted to even the busiest of us, have endeavoured "to leave the world unseen," and have sought "on the viewless wings

Fig. 1.

Fig. 2.

of poesy" to forget for a while "the weariness, the fever, and the fret"?

And it is well that even those of us who lack the poet's fancy and the poetic faculty should have the power, as Osler says, "to recognise the true poetry of life, the poetry of the commonplace, of the ordinary man and the plain, toil-worn woman, with their loves and their joys, their sorrows and their griefs."

While of those who may be classified amongst the true Æsculapian poets there have been some who have neglected the god of healing for the worship of Apollo, there have yet been several who, amid the daily routine of a busy medical practice, have spent happy as well as useful lives, finding expression in the divine gift of poetry for the full embodiment of that fine sense of the beauty and wondrousness of all visible things, "the earth and every common sight."

Such an one was *Henry Vaughan* (1622-1695)—"Silurist"—one of the earliest of our Æsculapian poets, who, amid the busy and exacting life of a country practitioner upon the South Welsh border, found expression for his passionate love of Nature and the delightful manifestations of her magnificence and beauty in some poems which may be equalled but are not excelled by Wordsworth.

Though there is no reason to suppose that he ever attempted the practice of medicine, *Abraham Cowley* (1618-1667), too, must be included amongst the disciples of Asclepius. He became a Doctor of Medicine of the University of Cambridge in 1657, which university produced at the same time another great poet, Milton. Both cultivated Latin poetry, and Dr. Johnson held such a high opinion of Cowley's work that he says, "If the Latin performances of Cowley and Milton be compared, the advantage seems to lie on the side of Cowley." Though there is no record of his ever having devoted himself to the practice of the healing art, we have it on the authority of Johnson that "in the commencement of the Royal Society, of which an account has been given by Dr. Birch, he appears busy among the experimental philosophers with the title of *Dr.* Cowley."

Sir Samuel Garth (1661-1719), the lifelong friend of Pope, was an admirable and successful physician, and no bad poet either. It was said of him that "No physician knew his art more nor his trade less," and Dryden refers to him as

"Garth generous as his muse."

His principal poem, "The Dispensary," published in 1699, "was

universally and liberally applauded. It was on the side of charity against the intrigues of interest, and of regular learning against licentious usurpation of medical authority, and was therefore naturally favoured by those who read and can judge of poetry" (Johnson).

Another poet, "not by necessity but inclination, who wrote not for a livelihood but for fame," or, if we may tell his own motives, "for a nobler purpose, to engage poetry in the cause of virtue," was *Sir Richard Blackmore* (*c.* 1650-1729), Master of Arts of Oxford and Doctor of Physic of Padua. Practising his art in Cheapside, he obtained considerable eminence amongst his fellows and an extensive practice. Of his "Creation, a Philosophical Poem," Dennis said that "It equalled that of Lucretius in the beauty of its versification, and infinitely surpassed it in the solidity and strength of its reasoning."

Had *Akenside* (1721-1770) been less celebrated as a poet he would probably have been more remembered as a physician. The author of "The Pleasures of the Imagination" occupied in his time no undistinguished position amongst his medical confrères, but while Mark Akenside, graduate of the Universities of Leyden and Cambridge, Fellow of the Royal College of Physicians and of the Royal Society, Physician to St. Thomas' Hospital, and Goulstonian Lecturer, is forgotten, Akenside the poet is still remembered and admired.

Oliver Goldsmith (1728-1774), too, whom Thackeray has termed "the most beloved of English writers," must be claimed amongst our Æsculapian poets, for after spending two winters at the University of Edinburgh he proceeded to the Continent to complete his medical education, and took the degree of Bachelor of Physic at Leyden (or, as some accounts say, Louvain). After a protracted continental tour, in which he visited Louvain, Antwerp, and Brussels, and rambled in Germany, Switzerland, and Northern Italy, with no other provision, it is said, than a flute, a guinea, and a spare shirt, earning food and lodging by his musical accomplishments and by his argumentative prowess in the learned disputations he held in colleges and convents, he returned to England.

He arrived in London in 1756, and after a brief period as usher in a school, then as an assistant to a chemist, he commenced practice as a physician in Bankside, Southwark, but he met with no success. His life of vagabondage and his free adventure-loving temperament ill-fitted him for the decorous

and laborious life of a London doctor. He continued his medical practice on and off—more frequently off than on—up to 1765, and then finally abandoned it. Thenceforward his life was that of a struggling man of letters, during which this sad failure in the art of the physician enriched English poetry with two of its finest descriptive poems—"The Traveller," and "The Deserted Village."

We claim old *Crabbe* (1754-1832), too—"Nature's sternest painter yet the best"—for he was a general practitioner at Aldborough, in Suffolk, before he became the Duke of Rutland's domestic chaplain.

The gentle and delicate *Keats* (1795-1821), that "mighty soul in a little body," though his name is but little associated with the profession of medicine, was in his early days intimately connected with it. He served an apprenticeship with a surgeon at Edmonton, near Enfield, after which he became a student at the then combined school of Guy's and St. Thomas'. His profession, however, soon became distasteful to him. His dreamy, sensitive spirit was haunted continually, it has been said, by an overwrought apprehension of doing mischief in the surgical operations which were performed by him. His body was already affected by the constitutional malady which at an all too early age proved fatal, and he who wrote the unforgettable line

"A thing of beauty is a joy for ever"

left no mark in medicine, though a name imperishable in poetry.

Equally distinguished as a poet and a man of letters, *David Macbeth Moir* (1798-1851), better known by his pen name "Delta" Moir, was a hard-working and most capable country practitioner, who, though in attendance almost night and day upon the plague-stricken inhabitants of Musselburgh, found time to adorn the pages of *Blackwood* with the fruits of his literary and poetic genius.

There are many others who have cultivated the muse while they practised medicine, but in recent times at least there is no one who has more successfully combined these arts and more brilliantly adorned both than *Oliver Wendell Holmes* (1809-1894). Holmes has, as Findlay puts it, "bulked so largely and so long in the eye of the reading world as a man of letters that it is not generally known how distinguished an ornament he was of his own profession." "I have passed," he humorously remarked himself some years ago in a conversation with the late editor of the *British Medical Journal*, "the best years of my life as a doctor,

and I hope they are not ashamed of me and do not reproach me for choosing to tread the flowery path of very light literature."

While the author of "The Chambered Nautilus," the poet, autocrat, and professor will long be held in remembrance by literary posterity, Oliver Wendell Holmes, the busy, hard-working medical practitioner in the city of Boston, will be remembered no less by the medical profession as the author of the "Essay on the Contagiousness of Puerperal Fever," which in its splendid prescience anticipated the marvellous bacteriological discoveries of our own day.

CLINICAL TEACHING.

I.—MEDICINE.

[*Contributed.*]

In the Editorial columns of the *Edinburgh Medical Journal* for August of this year an account was given of the new arrangements for clinical teaching in the Royal Infirmary. Taking these broadly, it may be said that they render it possible to carry into effect the changes suggested some years ago by the Pathological Club, which will render the training of the undergraduate in medicine much more complete than it has been possible to make it in the past. The scheme, so far, rather makes provision for the rearrangement of the teaching than defines in precise terms its details, but behind it there must be recognised the fact that it provides for more thorough clinical instruction, and for the distribution of the students amongst the wards in smaller groups, who will be graded according to the extent of their previous experience in each department. If, however, the hospital work is to receive an adequate share of attention from the student, it is clear that he must not be expected to add to his already overburdened curriculum a much larger amount of hospital work than hitherto, and the question immediately emerges, how is this clinical teaching to be reconciled with the other duties of the student? Dr. Byrom Bramwell[1] gave it as his opinion that "much more time is required for bedside study and work in the wards of the hospital. In order to get this time the number of systematic lectures which the student has to attend *daily* should be very materially curtailed, and the examinations should be rearranged so as to make them fewer and more practical."

Since the time that that was written much has been said of

the importance of recognising the scientific aspects of clinical training, and several authorities on medical education, especially those who hail from America, have taken up the position that *adequate clinical teaching can only be given by those whose whole time is devoted to hospital and research work.* Professor Cushing, in his suggestive Address in Surgery, delivered before the 17th International Congress of Medicine this year, sums up this opinion in a single paragraph when he says: "The more difficult and complicated problems of disease will gravitate to large institutions where no longer 'visiting' appointees but directors of hospital units in continuous service, unhampered by an ill-adapted hospital administration, can uninterruptedly devote themselves to their work without entering into competition for practice beyond the walls of the institution. For when advantage is taken of a hospital appointment to make it a high road to practice, the visiting physician or surgeon immediately becomes a less valuable institutional servant, if for no other reason than through the dissipation of his energies."

This view is based on an acquaintance with the German method of training, which in spite of certain obvious drawbacks in its application to undergraduates is certainly much in advance of the methods of our British hospitals in producing original work and advancing knowledge of the science of medicine. It may be well, therefore, to sketch the lines on which a German clinic is worked, more particularly as the ideals involved have been accepted by Mr. Flexner in his *Report on Medical Education in Europe* to the Carnegie Foundation, and have very greatly influenced the Royal Commission on University Education in London in its recommendations as to clinical teaching there. Flexner points out (taking the organisation of the Charité Hospital in Berlin as a typical example[2]) that the German clinic has three functions —healing, research, and teaching—and that these functions are inextricably interwoven and cannot be discussed separately with profit. The clinic as a whole is a self-contained unit, with its wards, museum, lecture-hall, laboratories, and special rooms, all under one chief, whose staff consists of whole-time paid assistants, of part-time paid assistants, and of volunteers, in addition to the necessary nursing and laboratory attendants. The unit contains six stations of twenty-eight beds each. Eighteen beds are situated in the main ward and ten in small rooms adjoining, and, in addition to rooms for the nurses and patients, the unit contains a clinical laboratory for routine work on blood, urine, and sputum.

But in addition to this the clinic as a whole has a set of research laboratories, which in a medical unit would consist of chemical and biological (including bacteriological) research departments and special rooms for X-ray observations and for physical therapeutics. The professor directs the whole clinic, and personally acts as chief in one laboratory. Each of his assistants, of whom three live in the hospital, is responsible for a laboratory, and also for the clinical work in one station, and opportunities are freely given to volunteers to co-operate in the researches which are being carried out. If, however, after six months' experience a volunteer is found to be of little value as a research worker, he is gently removed from the department. As a matter of fact it is found that work conducted along these lines does not interfere with the comfort and proper treatment of the patients, and that patients seek admission more readily to those clinics in which research is combined with treatment. It is obvious that the professor in charge of such a department can only engage in a very restricted amount of outside work, and although in most cases a certain degree of freedom is allowed to him, yet it is practically limited by the demands which are imposed by the organisation of his hospital charge.

Basing his evidence on facts such as these, Mr. Flexner, in his *Report* to the *Royal Commission on University Education in London*, advocated a radical alteration in the whole relation of the staff and students to the hospital. He stated that clinical teaching in London remains an incident in the life of a busy consultant; that there is no certain or direct interaction between the fundamental scientists and the clinicians; that the teaching hospitals are not equipped nor are they organised with a view to teaching of university quality; that their laboratories need to be greatly extended and their staffs completely reorganised before they can serve as university hospitals; that the clinical material is insufficiently classified; and that there is nothing like a comparatively permanent scientific or clinical staff.

Mr. Flexner's argument thus leads to the conclusion that university teaching can only be given by men who are actively and systematically engaged in the advancement of knowledge in the subject they teach, and that this requires active co-operation in laboratory work and a rigid restriction of all outside engagements.

Sir William Osler accepts the main positions of Flexner's evidence, but is more impressed with the value of the clinical work which is done under present conditions, and his views may

be summarised as follows:—The authorities must be convinced that the subjects of clinical work come directly within the sphere of the university, and certain of the London hospitals must be adapted to meet the demands of the scientific study of disease and the scientific training of students. The problem is how to place teachers in every medical school in the same relation with the university as the professors of physiology and of physics—how to give each of them a department organised on university lines in which the three functions of a hospital may be utilised and co-ordinated. He comes to as his deliberate opinion that the hospital unit meets the condition — a department under the complete control of the university, or under the joint control of hospital and university.

The general conclusions at which the Commission arrived are as follows:—

1. "The standard of the teachers in these subjects ought not to be different from that of university professors in other subjects, and it is therefore necessary to appoint such per professors of the various branches of clinical medicine and surgery who will devote the greater part of their time to teaching and research.

2. "The complete success of the system of medicine and its dependence for assistance upon other branches of science necessitate co-operation and the special organisation of a professorial department, in order to enable the professor to carry on research successfully, and also to give scientific instruction in the subject.

3. "The kind of organisation known as the 'hospital unit' appears to us well fitted for securing this end. It consists of a professor with the control of wards or outpatient department, assistants appointed by the professor with a view to complementing his own knowledge and affording him the special assistance he requires to carry on research in the direction in which he is interested, and, finally, laboratory accommodation in close proximity to the wards, not only for the service of the wards and the examinations and procedures connected with the diagnosis and treatment of the cases but also for the purposes of research.

4. "For scientific instruction in medicine the kind of teaching known as the clinical demonstration or lecture appears to us of great value, and we think in some form or other it ought to be systematically given. The time and knowledge required for this kind of teaching cannot be expected from the busy or large practice. It needs a man who is devoting his life to the pursuit of science in his subject, and who is aided by a competent staff of assistants.

5. "It is equally necessary for the student in every department of

medicine and surgery that he should have free access to patients in the wards and out-patient departments, and learn by personal experience the whole technique of his art. For this purpose we think the English system, under which each student serves for a time as a medical clerk and a surgical dresser under the supervision, direction, and individual instruction of one of the physicians or surgeons of the hospital, is admirable, and should be continued. The special merit and value of this system, however, does not lie in the fact that the teachers are, as in London, actively engaged in the practice of their profession. The same teaching could be given by the professor with as good practical results, and certainly with greater educational effect from the point of view of medical science, though we think that it will best be given if the professor is also allowed some opportunity for private practice.

6. "It will not be financially possible to appoint a sufficient number of professors to enable them to give this clinical instruction to all the students in the small groups into which they are at present divided under the physicians and surgeons of the London medical schools. Some of this work could be done by the assistants to the professor, and the more senior assistants would probably be exceedingly well qualified for the purpose. Besides, there will be the opportunity in this case of calling in the more experienced assistance and co-operation of members of the profession in active practice, and if this could be done it would be of advantage both to them and to the students."

Further remarks of very great importance are to be found in a subsequent section of the *Report*, where the relation between clinical work in the pathological and other laboratories of the university are under discussion. We quote them as they stand:—

"The field of this rapidly advancing science (*sc.* Pathology) is already too wide for one man to undertake. Laboratories must be provided for the several branches of the subject and placed in charge of men of special scientific training in each branch. Whether the whole pathological department should be under one head or not is a question of organisation which may vary in different medical colleges, but it is clear that the whole department should be in close proximity to the hospital. There is no doubt that the students must have practical training in the clinical laboratory, and it appears to be the better opinion that such laboratories for routine work are required close to wards, though some authorities think that all examinations of blood, urine, etc., are better carried out under the immediate direction of the most experienced specialists in the laboratories of the pathological department. However this may be arranged, it is important to

notice that both the laboratories of the pathological department and the clinical laboratories for the service of the wards are quite distinct from the research laboratories of the clinical professors who would be appointed under the system we recommend. These research laboratories would also most conveniently be situated close to the wards, but their equipment and arrangement would vary with the particular line of work in which each professor was specially interested for the time being. It is here that research would be carried on by the clinical professor and his assistants in cardiac physics, neurology, physical therapeutics and X-ray diagnosis, and many other aspects of disease and methods of treatment for the pursuit and development of which little time and opportunity are found under the present organisation of the medical schools. Places for the assistants of these professors should also be reserved in one or other of the laboratories of the pathological department, according to the special knowledge and training on account of which they had been selected for their appointments."

Such being the general position, it is important to consider, in view of the present situation in Edinburgh, how far these recommendations are applicable to the Edinburgh school, and, in the first place, it is important to realise that the physician in charge of wards in Edinburgh is much more directly concerned with teaching than those of the London hospitals. In London the full physician gives his forenoons, as a rule, to private work, and only visits his hospital on certain afternoons in the week, whereas in Edinburgh the physician gives some of the best morning hours to his clinical teaching, and is expected to meet his clinique daily during the session. It is also a much less common occurrence for the Edinburgh physician to be totally cut off from laboratory research work than is the case with his London colleague, and the result is that, even under present conditions, he approximates more closely to the university professor than the visiting physician does in many other schools. It is also to be remembered that many of the most important contributions made in Edinburgh to the advancement of medicine have come from these "extra-mural" teachers, and that men such as Balfour, Bramwell, Gibson, and Bruce have shared with the university professors of clinical medicine the distinction of having made contributions of permanent value in the sphere of scientific medicine.

Yet when all allowances are made, it cannot be denied that there is need for an advance, at all events in the higher teaching.

The professor who is appointed by the University to the Chair of Clinical Medicine, and who receives on that account a larger salary than his colleagues in the Infirmary, ought assuredly to do more than they can be expected to undertake for the higher branches of work; especially should he be required not only to take his share in the routine teaching of undergraduates and in the conduct of the professional examinations, but he should also devote a large portion of his energies to directing research in various lines along which it can be brought into relation with clinical work. It is obvious also that if the Post-graduate Summer School which was started some years ago continues to exhibit the growth and vitality it has shown hitherto, the professor of clinical medicine should take an active interest in its development, and contribute to its efficiency. For example, it might be linked up with special post-graduate research work in the laboratories of a clinical department.

Edinburgh has already been fortunate in possessing in the Royal College of Physicians' Laboratory an institution in which scientific work is more closely related to clinical medicine than has been the case elsewhere, and in which many of the physicians who now hold responsible positions in the Infirmary have been workers. In addition to this, through the efforts of the late Dr. George Gibson, a clinical laboratory for the investigation of disease by physical methods has been initiated within the Infirmary, and already it has justified its existence by the appearance of a series of papers dealing with the more obscure forms of heart disease. It is to be noted, however, that the whole work done in this laboratory is unremunerated, and of necessity this restricts both the number of workers and the time which most of them are able to devote to problems which they are seeking to elucidate. In the Royal College of Physicians' Laboratory a small permanent staff receive salaries and a few of the workers hold research scholarships, but most of the researches are being prosecuted there also by volunteers whose services are wholly unpaid for.

The university authorities, when they come to make the appointment of the new professor, will have, amongst other things, to decide how far they will rest content with imposing upon him no further burdens than are borne by the present staff of the Royal Infirmary. If they are satisfied that his only duty is to take his share in the routine training of the undergraduate, so that at the end of his curriculum he may be turned out a respectable and competent general practitioner, then he will merely take his place according to seniority and such additional status as his academic

position confers amongst the able body of colleagues whose co-operation has in the past so largely contributed to the prestige of the Edinburgh school. But if they realise, as they must, that in accepting the funds entrusted to them for the erection of the new Chair of Clinical Medicine they have incurred a responsibility for providing opportunities of more advanced work to the smaller band of students and graduates who are able to make a right use of such facilities, they must face the fact that not only should their choice of a professor fall upon a man who is willing to make considerable sacrifices in regard to consulting practice outside the hospital in order to devote himself to the duties of his office, but they must also arrange for such an adequate staff of salaried assistants and laboratory equipment for the department as will enable medicine in the University to be taught from the standpoint indicated in the earlier paragraphs of this article.

Provision already exists for the training of the average student in the more elementary routine work of clinical chemistry and microscopy, and there is reason to believe that under the new arrangements which the Managers have sanctioned considerable extension of these facilities will soon be available. But in addition to this, either within the present university buildings or in the Infirmary, or in the new Lister Institute which it is proposed to erect, some definite arrangements should certainly be made whereby the professor of clinical medicine may have opportunities of organising research in close and intimate association with his colleagues in the Chairs of Pathology, Physiology, Bacteriology, and Chemistry.

It is earnestly to be desired that the University may take the larger view of its responsibilities and aim at the organisation of a modern and fully-equipped department of clinical medicine such as at present does not exist in the United Kingdom. Edinburgh has hitherto been in the van as regards the teaching of clinical medicine; surely she will keep her rightful place.

References.—[1] *Clinical Studies*, July 1909. [2] Flexner, *Medical Education in Europe*, New York, 1912, pp. 161 *et seq.*

ANALYTICAL REPORTS.

Perogen Bath.

(A. & M. Zimmermann.)

Under this name Messrs. A. & M. Zimmermann have issued, in a convenient form for home use, a preparation of sodium perborate, with a catalyzer which liberates the oxygen. When the ingredients are added to a bath, at a temperature of 90 to 98 F., nascent oxygen is given off in great quantities, the

effervescence lasting for about twenty minutes. The oxygen exerts a direct physico-chemical action on the skin and its sensory nerve endings, and an indirect action on the vascular and nervous systems. This preparation has no deleterious effects on the skin and does not damage the bath-tub or stain the towels. The sensation during immersion is distinctly pleasant and the after-effect most soothing. The treatment is indicated in various functional neuroses and in various affections of the vascular system. It is contra-indicated in the presence of very low blood-pressure, in mitral defects, and in anæmic subjects.

Acetyl-Salicylic Acid Preparations—Hydropyrin and Kalmopyrin.

(Alfred Bishop, Ltd.)

Hitherto the usefulness of the acetyl-salicylic acid has been somewhat restricted by its insolubility, which necessitated its administration in tablet form. In the form of hydropyrin (lithium acetyl-salicylate) and kalmopyrin (calcium acetyl-salicylate) Alfred Bishop, Ltd., has put upon the market two new preparations which are readily soluble in a small volume of water and are perfectly stable. As hydropyrin is soluble in alcohol, it can be added to tinctures and alcoholic extracts. Both salts are practically tasteless, and can be administered to children in syrups. The therapeutic effects of the two drugs are the same, the salicylic acid being split off in the alkaline intestinal fluid and immediately absorbed into the blood. An important advantage of prescribing these drugs in solution is that it prevents the risk of self-medication inherent to the tablet form of dispensing.

ROYAL COLLEGE OF SURGEONS OF EDINBURGH.—At a meeting of the College, held on 16th July, the following gentlemen, having passed the requisite examinations, were admitted Fellows:—Arthur L. Brown, M.D., C.M., Trinity Medical College, Toronto, Regina, Sask., Canada; William B. Brownlie, M.B., Ch.B.(Glasg.), Springvale, Strathaven; Charles Corben, M.R.C.S., L.R.C.P.(Lond.), M.D (Durh.), Hove, Sussex; Robert Crothers, L.R.C.P.&S.E., etc., Ashlea, Droitwitch; R. K. Dadachanji, L.M.&S. (Bombay), M.R.C.S., L.R.C.P.(Lond.), Cumballa Hill, Bombay; John K. M. Dickie, M.D.(Edin.), Edinburgh; Matthew R. Drennan, M.B., Ch.B.(Edin.), Edinburgh; Edwin C. East, M.R.C.S., L.R.C.P.(Lond.), Birmingham; Max Greenberg, M.B., Ch.B.(Edin.), Edinburgh; Francis J. Henry, M.B., Ch.B. (Glasg.), D.P.H.(Camb.), Middlesborough; Frederick N. H. Maidment, M.R.C.S., L.R.C.P.(Lond.), M.B., Ch.B.(Lond.), Twyford, Winchester; Robert Massie, L.R.C.P.&S.E., etc., Edinburgh; Arthur S. Roe, M.R.C.S., L.R.C.P. (Lond.), M.B., Ch.B.(Oxford), Brisbane, Queensland; Robert Stout, M.R.C.S., L.R.C.P., M.D.(Lond.), London; Alfred G. Talbot, M.B., C.M.(Edin.), Christchurch, New Zealand; John Watson, L.R.C.P.&S.E., etc., Glasgow.

Triple Qualification.—At the Quarterly Examinations of the Triple Qualification Board, held in Edinburgh during July, the following candidates passed the *First Examination*:—D. M'G. Stewart; J. W. Irvine; J. F. Campbell; and W. F. G. Radford.

The following passed the *Second Examination*:—J. F. Kerr; T. D. Renwick; W. G. Anderson; Lizzie O'Flynn; A. W. M'Gregor; J. E. Ainsley; E. A. Neilson; M. A. White; and B. St. A. A. Young.

The following passed the *Third Examination*: S. N. Toulmin; W. D. Bathgate; L. O. Weinman; P. Chisholm; T. E. Lawson; D. C. M. Page; W. H. O'Grady; C. T. Darwent; J. Berry; H. A. L. Guthrie; E. Annequin; and F. A. V. Denning.

The following candidates, having passed the *Final Examination*, were admitted L.R.C.P.E., L.R.C.S.E., L.R.F.P.&S.G.:—George William Fleming, Co. Tyrone; Stanley Ellis Jones, Halifax, Yorks.; Harry Gordon Hankins, Cape Town, South Africa; William Murphy, Cork; John Morrison Milne, Dundee; Charles Henry Niel Baker, India; Charles Calder Forsyth, Forres; Cameron Vernon Bailey, Ontario; James Blair Donaldson, Victoria; Stuart MacVicar Fisher, London, Ont.; Frederick George Gibbs, Edinburgh; John Ellwood Leonard Keyes, Barrie, Canada; Frederick Richard Lucas, Scotland; James Robertson Menzies, Edinburgh; William Arthur Rees, Ilfracombe; Ian Charles Mackenzie, Edinburgh; Charles Cosgrove, Sydney, New South Wales; and Roy Darley Clayton, Doncaster, Yorks.

RECENT ADVANCES IN MEDICAL SCIENCE.

MEDICINE.

UNDER THE CHARGE OF

W. T. RITCHIE, M.D.; EDWIN MATTHEW, M.D.; AND J. D. COMRIE, M.D.

The Value of Tuberculin.

It is extremely difficult to estimate the value of tuberculin as a remedial agent. Comparatively few have opportunity to use it on a large scale, and those whose chances of employing it are limited by the conditions of ordinary hospital work, where patients cannot be kept under observation for prolonged periods, must often be in doubt in how far the improvement which takes place in the condition of patients is due to the specific remedy, and in how far to the general regimen of the hospital. For this reason no apology is necessary for summarising here part of the discussion on the value of tuberculin, which occupied a considerable part of the session of the National Conference for the Prevention of Consumption held in London on 4th August of this year.

Sims Woodhead, while convinced that in selected cases tuberculin was of material assistance, denied that tuberculin treatment ever produced anything like complete immunity: relative immunity or decreased susceptibility to the bacilli was the most that could be attained. Indiscriminate and unintelligent use of tuberculin is still one of the grave dangers to be overcome in the crusade against tuberculosis. The "exotoxic" products of the tubercle bacilli are probably negligible factors in the production of symptoms, and it is for this reason apparently that antitoxic sera have hitherto proved valueless. The problem is quite different from that of diphtheria, in

which toxic action preponderates, and in which it is possible to produce in an animal injected with the exotoxic products of the diphtheria bacillus so complete an immunity to the diphtheria toxin that the bacillus is reduced to the level of a saprophyte. Any successful form of tuberculinisation must so fortify the tissues as to enable them to deal with the living tubercle bacillus. Tubercle bacilli are more resistant to ingestion by the polynuclear cells of the blood than are typhoid and cholera bacilli, but the mononuclear hyaline cell has the power of completely digesting them, apparently because, acting slowly, it does not set free the endotoxins so rapidly as the smaller phagocyte. It seems possible, as Sahli holds, that in the process of inflammation the cells already mentioned, the body fluids, the blood-plates, the lymphocytes, and even connective tissue cells, may help to neutralise the toxins of the tubercle bacilli. If we could control the tuberculin stimulus to the exact point at which the tissues are rendered most capable of dealing with the bacilli, then the remedy could be used in every case. This, however, is impossible; the local reaction, which means an increase in the physiological defences, may overstep bounds and aggravate the condition. Woodhead believes it is wiser to avoid all local reactions by careful regulation of the dose. Two sets of conditions should be taken into account when balancing the evidence for and against the adoption of tuberculin treatment. First, are the tissues sufficiently well nourished to react? Are their waste products removed in a satisfactory fashion? Woodhead suggests as an analogy the response of two individuals to septic infection got at a post-mortem examination: in one, a robust person, local suppuration ensues; in the other no local suppuration, but general septicæmia. Similarly in tuberculosis: if the tissues can react to the stimulus of the bacilli or of the tuberculin the disease will become localised; if they react feebly, or not at all, doses of tuberculin sufficient to provoke a reaction may cause miliary tuberculosis, by breaking down any defences which already exist. The second consideration is equally important—Are the products of the tubercle bacilli already present in such quantities that they are capable of initiating and continuing to stimulate a curative reaction? If such be the case, tuberculin can do no good, and may do harm. Concerning dosage, the first given ought to produce no reaction; there ought to be sufficient interval to allow the negative phase to disappear. If any reaction ensue, a much smaller dose should be given, and only after all reaction has subsided. The opsonic index being too complicated for everyday work, we must rely on the temperature; a rise of half a degree is regarded as evidence of a reaction. After the temperature has been normal for a couple of days the dose may be repeated. If more than these small elevations of temperature cannot be avoided, the patient ought to be allowed to rest until his resistance rises. Woodhead's main contentions may be summed up

thus: There are two great difficulties in the way of the general use of tuberculin treatment—(1) the difficulty of making sure that the diseased tissue is completely isolated: (2) the danger of over-stimulation of the tissues. And three main considerations to be decided when we are doubtful as to whether we should use tuberculin: (1) Are the tissues well nourished and the functions well maintained? (2) Are bacilli already present and accessible in sufficient numbers to provoke therapeutic reaction of the organism? (3) Is it safe to induce any lytic action on these bacilli in the present condition of the patient?

Béraneck said that the toxins of Koch's bacillus had a double action: they produced a local necrosis and a general intoxication, particularly of the nerve-cells. Defence resolves itself into a cellular activity, which expresses itself on the one hand by an antituberculous diastatic function (the destruction in the body of the bacillus and its toxins), and on the other by cicatrisation of tuberculous foci. The cells which fulfil the first function are described as protecting cells: those which discharge the second as reparative cells. In most tuberculous cases left to their own resources these functions are inadequate. The toxins escape the action of the protective cells and fix on tissues of their own selection. Rational treatment is to raise the activity of the protective cells, and this is the *rôle* of tuberculin therapy. Except Koch's bacillary emulsion, all tuberculins are nothing but solutions of tuberculous toxins, to which are added some accessory substances—albumoses, peptones, and their derivatives, which possess a certain toxicity of their own. To treat a disease by injecting its own toxins, which when produced by the bacilli in the body weaken the natural defences, seems a paradox. In answer Béraneck asserts that the toxins evolved in the body are not identical with those artificially produced as tuberculin, and that the differences justify their therapeutic use. He presupposes that the toxins of tuberculin are more easily dealt with by the protective cells than the toxins produced by bacilli *in vivo*, and that the diastatic function of these cells is thus exercised, and ultimately educated to be better able to neutralise the true tubercle toxins. His tuberculin, accordingly, is prepared from an attenuated bacillus. The power of adaptation which the protective cells possess varies from one individual to another, and in the same individual at different times. It may be more easily stimulated by one tuberculin than another: hence a particular tuberculin may at times succeed when others fail. Since tuberculinisation is a vaccination, the rules of active immunisation might be thought applicable, but this would be an error, for we are not dealing with a healthy but with an infected person. Tuberculin therapy, inasmuch as it is applied to declared tuberculosis, does not constitute immunisation, and is nothing but a curative method. A case cured by tuberculin is not thereby immunised against the disease. Large doses of tuberculin are not justified. The optimum dose—that

which produces signs of improvement—ought not to be exceeded so long as improvement continues. A homœopathic dose should be used at first—$\frac{1}{20}$ c.c. of A/2048 or A/4192 (Sahli) or $\frac{1}{20}$ c.c. T Bk_5 or T Bk_6 (Philip)—and repeated 5 or 10 times to judge of its effect. Then it may be increased by $\frac{1}{20}$ c.c. until benefit accrues, the optimum dose being adhered to so long as the favourable action persists. Reaction is evidence of excess. The optimum dose is always less than the reactional dose of Béraneck's tuberculin. Besides stimulating the protective cells, tuberculin favourably influences the reparative mechanism. Surgical tuberculosis should be treated by intra-focal injections of tuberculin. The indications for tuberculin therapy can hardly be definitely laid down. Even rationally applied, tuberculins have a limited power. Only those cases benefit whose defences are still in a position to subdue the tubercle bacillus, and whether this power is or is not retained can only be determined by trial. Tuberculin should not be used in very rapid and severe or very advanced cases. On the other hand it should not be restricted to afebrile, limited, localised cases; fever is in itself no contra-indication. Spreading tuberculosis may benefit if the lesions are not too extensive or spreading too rapidly. The chance of success is increased by beginning the treatment as early as the diagnosis is made.

Sahli's contribution to the discussion is in the form of a series of propositions, briefly as follows:—All tuberculins are essentially identical, the active principle being the protein of tubercle bacilli. Differences are due to impurities. There is no evidence of an exotoxin. Tuberculin should be provided in suitably graduated dilutions to avoid mistakes in dosage. The concentration as well as the absolute dose is important; a concentrated dose is more rapidly absorbed, therefore more active, than a diluted one. Tuberculin should not be used for diagnosis, injections especially being dangerous. Tuberculin treatment is safe, if only its more obvious clinical reactions are avoided. Only this mild method gives all the benefit possible. The treatment is of most use in early cases, although in advanced cases there may be symptomatic benefit. In order that tuberculin treatment should be widely available for the most favourable incipient cases, the general practitioner ought to be proficient in applying it. The theory of the action of tuberculin is well established—it is essentially the same as tuberculin reaction. Even so-called reactionless treatment is based on reactive processes. The reaction of tuberculin consists in stimulation of the natural healing forces; there is a local counter-action in the foci, and a general detoxication of the preformed tuberculin. Tuberculin only acts favourably when the organism is not already under the influence of the preformed tuberculin—that is, in the slighter cases. It is not necessary to increase doses to the farthest limit of tolerance. Tuberculin does not immunise, it only stimulates and activates the counter-

actions of the body at each injection. Immunity is impossible of attainment. All localised tuberculosis is suitable, provided patient is not too seriously ill. Acute cases cannot as a rule be treated.

Nathan Raw employs chiefly Koch's new tuberculin, bovine and human. The mild method of administration surpasses the intensive method in (1) avoiding reactions, (2) being applicable in severe cases, and (3) interfering as little as possible with the activities of the patient. The specific actions of tuberculin are the production of (1) toxic immunity, and (2) local hyperæmia. Raw's maximum dose is $\frac{1}{100}$ mgr. of dried bacillary substances. Putting aside incurable cases, especially of generalised or mixed infections, every uncomplicated case of tuberculosis may be treated with minute doses. An evening temperature of 101° F. is a contra-indication: so is a tendency to hæmoptysis. The dosage of Koch's new tuberculin is 0·0001 mgr., 0·0002, 0·0004, 0·0005, 0·0006, 0·0008, 0·001, 0·004, 0·006, 0·0075, 0·008, 0·01. Injections given weekly, special watch being kept on temperature and pulse. Raw believes that tuberculin is of great value in many cases. He holds that when we are dealing with a bovine infection human tuberculin should be used, and *vice versâ*.

E. Rist (Paris), who uses Ruppell's sensitised bacillary emulsion, emphasises the need for, and difficulty in, selecting suitable cases. Febrile patients he discards as unsuitable. The class of patients which are fit for the treatment are those with torpid, mild lesions, many of whom do well under tuberculin. Rist categorically states that he has "never seen a patient doing well under tuberculin without remaining in doubt whether he would not have done as well without tuberculin." He never relies on tuberculin alone, yet he still gives it because a few derive subjective benefit, which has no relation to weight, appetite, or physical signs: it may be due to detoxication, or merely to suggestion.

Sir James K. Fowler quotes from the report by the physicians to the Brompton Hospital in 1891 on the use of old tuberculin, showing that their opinion was adverse. He regards the widely extended use of tuberculin in various dispensaries and sanatoria under the Insurance Act by men who have had little experience of the remedy as a serious state of affairs, and gives details of ten cases treated by tuberculin before admission to the King Edward VII. Sanatorium to show that tuberculin has lost none of its capacity for doing harm. It is impossible to summarise these here: it is enough to say that they depict the lamentable results of failure to pay attention to the principles laid down by Béraneck, Sahli, and indeed every expert on the use of tuberculin. The experience of the King Edward VII. Sanatorium is on the whole not favourable towards tuberculin. Fowler concludes that the use of tuberculin in even small doses is not free from danger, that it is absolutely inadmissible if there is fever, or if general

reactions ensue. Focal reactions are to be avoided, as they cannot be controlled.

Bardswell's contribution to the discussion is based on statistics of twenty months' work with tuberculin at the King Edward VII, Sanatorium, during which time 154 patients (62 per cent. of all treated) got tuberculin. Of these, 24 had no bacilli in the sputum, and all did well; but it has always been the experience of the sanatorium that such cases recover, hence the record is of no evidential value. Of the 130 remaining, 64·6 per cent. were much improved, 17·7 per cent. improved, 17·7 stationary or worse, 32·3 per cent. lost bacilli. These results are better than any previously obtained in the sanatorium, but as they were selected cases there is no proper series of non-tuberculin treated cases with which to compare them. It would appear that when this is allowed for, the general results are much the same, but that there is an appreciable difference in the number of patients who lose bacilli, the greatest improvement being in the group of moderately advanced cases. While it is impossible to give a final opinion as to tuberculin, and is most difficult to say how much of a patient's improvement is due to it and how much to sanatorium treatment, it is a useful addition to other methods. It sometimes seems to expedite convalescence. It is not a remedy which will turn an unfavourable case into a favourable one; more often than not it will do harm. It is quite unsuitable as a routine treatment. Bardswell insists very strongly that it is most important never to provoke reactions, and does not think that a rise of temperature of even a degree should be allowed to occur.

SURGERY.

UNDER THE CHARGE OF

J. W. STRUTHERS, F.R.C.S., AND D. P. D. WILKIE, F.R.C.S.

Osteochrondritis Deformans Juvenilis.

In 1910 Perthes (*Deutsch. Zeitschr. f. Chir.*, Bd. cvii. S. 111) recorded several cases of a disease affecting the hip joint in children characterised by an irregular rarefaction and distortion of the head of the femur and very liable to be mistaken for early tuberculous hip-joint disease. To this disease he applied the name of arthritis deformans juvenilis, a name which has been adopted by several later observers.

Further observations and an experience of 21 cases of this disease have led Perthes (*Arch. f. klin. Chir.*, Bd. ci. H. 3) to modify his original views regarding its pathology, and he now considers that the term osteochondritis deformans juvenilis is more correctly descriptive of this malady.

The disease is met with in children, usually between the ages of 5 and 10 years, affecting, as a rule, one hip joint. The child is generally

brought for advice because his parents have noticed that he is limping; seldom is any pain complained of, and the limp has not prevented the child from running about and playing as usual. On examining the child the limp is seen to be pronounced, resembling that of a unilateral congenital dislocation. The affected limb is found to be slightly adducted, the trochanter is slightly higher than on the sound side, but shortening of the limb seldom exceeds half an inch. The hip joint can be flexed with perfect freedom; there is, however, great limitation of abduction and of rotation. No creaking nor crepitation can be felt when the hip joint is moved, and the head of the femur can be jarred against the acetabulum without causing any pain. There is usually a moderate degree of muscular atrophy in the limb, especially noticeable in the gluteal muscles. Apart from a spasm of the adductors, which is constantly present, there is a marked absence of muscular rigidity, an important distinguishing feature from tuberculous hip-joint disease. X-ray examination of the joint gives a characteristic picture. Invariably there is seen a flattening of the upper epiphysis of the femur, and in it there are visible small areas of rarefaction or even complete loss of bony structure. The epiphyseal line is irregular in outline and sometimes appears to be bridged by bone in parts. In the outer and upper part of the femoral neck areas of rarefaction similar to those in the epiphysis are frequently visible. The appearances suggest that from some softening process in the femoral epiphysis there has resulted a sinking in and flattening of the upper part of the head of the bone, which has lost its rounded contour.

If the patient be given an anæsthetic, it is found that rather more than half of the limitation of abduction at the hip joint is due to muscular spasm, the remainder being due to the physical deformity in the head of the femur.

In one case Perthes explored the hip joint and found that there were no visible pathological changes in the synovial membrane nor in the articular cartilage of the head of the femur apart from the irregularity in its contour. He excised a wedge from the deformed portion of the femoral epiphysis, and on microscopic examination it was found that the areas of apparent rarefaction shown by the X-ray were due to the presence of small nodules of cartilage throughout the bony structure. There was no evidence of inflammatory changes of any kind. Perthes believes that the disease is a retrogressive change in the bone, and that just as in the repair of a fracture there are frequently found, at one stage, nodules of cartilage in the callus, which later develop into bone, so here we have the process reversed.

The most important practical point in regard to the disease is its tendency towards spontaneous cure. It usually runs a course of from a few months to two years and then steady and lasting improvement sets in. Many of Perthes' cases had been under treatment for supposed

tuberculous hip disease for many months when the correct diagnosis was made, but it is of interest to note that in spite of the complete immobilisation of the hip to which they had been subjected they made perfect recoveries with movable hip joints. This fact was so striking that the question arises whether the excellent results attributed to conservative treatment in early tuberculous hip-joint disease have not been exaggerated, many of the cases of complete recovery having been in reality examples of osteochondritis. In cases which have undergone spontaneous cure the X-ray picture shows a broad flat head and a short thick neck set almost at right angles to the shaft of the femur—in fact a fairly typical picture of coxa vara—and probably one of the most fertile sources of this deformity is osteochondritis deformans juvenilis. In regard to the etiology of the disease Perthes has now, as the result of a wider knowledge and experience, quite given up his original view that it was due to a chronic mild osteomyelitis of the femoral head starting in early childhood. He is inclined to think that a trauma leading to some disturbance in the nutrition of the area involved, which, as Lexer has shown, is supplied by one artery, is primarily responsible for the condition in many instances. In only 7 out of 21 cases, however, did he obtain any definite history of trauma, and in none had this been of a severe nature. It is worthy of note how frequently this disease occurs in two or more members of the same family. Perthes had two brothers under observation both suffering from it, and other observers have noted similar instances.

The treatment of this condition must be for the most part expectant. We have no means of arresting or of hastening the course of the disease in the femoral head. The most that can be done is to prevent atrophy of the abductor muscles of the hip by regular massage. The child should be allowed to run about in spite of the limp, and the parents may be reassured that this will gradually disappear in the course of years.

In the few cases where pain is a feature in the early stages rest with extension is indicated; operative treatment is very rarely called for.

Operative Treatment of Floating Kidney.

As the result of very extensive experience, Kocher (*Correspondenz-bl. f. schweiz. Aerzte*, 1913, No. 18, p. 545) has come to the conclusion that all the various methods of suturing commonly employed in the treatment of movable kidney are unreliable and are frequently followed by recurrence.

The only reliable means of fixing a floating kidney in his opinion is to induce extensive fibrous tissue formation around it in order that it may become firmly embedded in this scar tissue. Consequently the old method of baring the posterior surface of the kidney, of inserting an iodoform gauze tampon from the skin wound down to it and leaving this foreign body for from two to three weeks *in situ*, thus establishing

a granulating canal and later a dense fibrous scar, is still the most successful form of operative treatment. The only objection to this method is the time occupied by the after-treatment, four to six weeks' rest in bed being essential. In order to shorten this period and at the same time to secure a firm embedding of the kidney in fibrous tissue, Kocher in one case transplanted a large oblong portion of fascia lata from the thigh, and stitched this round the lower pole of the kidney in such a way that it formed a pocket in which the kidney rested. This fascial pocket was then secured to the lumbar aponeurosis, fixing the kidney in good position. Henschen (*Arch. f. klin. Chir.*, Bd. c. H. 4) has described an almost identical operation which he has carried out with complete success.

The method of slinging up the kidney in a fascial pocket is valuable, mainly from the fact that the presence of a portion of transplanted aponeurosis calls forth around it a generous formation of fibrous tissue in which the kidney becomes embedded.

Section of the Antero-lateral Column of the Spinal Cord.

In order to give relief from the intractable pain caused by tumours pressing on nerve roots or plexuses, Spiller (*Journ. Amer. Med. Assoc.*, 18th May 1912) suggested that section of one or both of the antero-lateral columns of the cord above the point of pressure might be a feasible surgical procedure. This operation was first carried out, and with success, by Martin (*Ibid.*) in a case of inoperable tumour involving the lower part of the cord. He divided both antero-lateral columns above the seat of disease with great relief to the patient. Beer (*Journ. Amer. Med. Assoc.*, 25th January 1913) records a second case in which the persistent pain caused by a secondary malignant growth pressing on the lumbar and sacral plexuses on the right side was completely relieved by section of the left antero-lateral column of the cord in the dorsal region.

The operation consisted in the removal of the laminæ of the ninth and tenth dorsal vertebræ, opening of the dura, rotation of the cord on its long axis by traction with a strabismus hook passed round a dorsal root, and finally division of the tract by means of a small sharp knife passed into the cord with its blunt edge towards the crossed pyramidal tract. The incision was carried forward for 2·5 mm., and to the same depth. Following the operation there was complete loss of all sensation to pain, to cold, and to some extent to heat in the right lower extremity: sensation to touch, however, remained normal.

Beer concludes that "surgically considered, the operation of cutting the antero-lateral column without doing serious damage to the rest of the spinal cord is perfectly feasible and not difficult. Therapeutically considered, the almost complete freedom from pain produced by this surgical intervention met the indications presented in the case here reported." D. P. D. W.

OBSTETRICS AND GYNECOLOGY.

UNDER THE CHARGE OF

A. H. F. BARBOUR, M.D., AND J. W. BALLANTYNE, M.D.

Treatment of Inoperable Cancer of the Cervix.

WHAT can be done for a patient who is suffering from a cancer of the cervix uteri too far advanced to permit of hysterectomy of any kind, even the most extensive and searching in its scope and method? The question is one which, sad to say, is asked only too often still, for the crusade against cancer has not yet succeeded in bringing to light all cases of that malady at so early a stage as to yield good hopes for operation. The gynecologist is still too often called upon to advise as to the best palliative procedures to be adopted in inoperable cases, and so numerous have been the new plans which have been advanced during the past fifteen or twenty years to give some relief to these doomed patients, that few medical men are acquainted with them all. Drs. Roziès and Arrivat (*Gaz. des hôp.*, ann. vol. lxxxvi. pp. 1141-50, 21st June 1913) have, therefore, done well to bring together and pass in review the various devices which have been introduced during recent years to alleviate the hard fate of the woman dying of cancer of the cervix uteri.

Drs. Roziès and Arrivat divide the methods which have been recommended and employed into surgical and medical, and subdivide the former into six varieties. The first to be named is the bilateral *ligation of such blood-vessels* as the hypogastrics, the uterines, and the utero-ovarians, for the purpose of lessening the blood-supply of the tumour and thus of starving its cells, so to say, into innocency; but Tuffier, de Rouville, and Martin have none of them got results encouraging enough to warrant others in performing operations which are somewhat difficult and not free from danger. Then, again, the various forms of *amputation of the cervix* are in no case sufficient, not even that which reaches highest, the supra-isthmic one; further, they are all associated with much hæmorrhage, and may require the use of the cautery. They do, however, make vaginal disinfection and antisepsis more easy to carry out.

The *interstitial injections* of various substances into the growth when it has no fungating masses or deep ulcerations is regarded by Drs. Roziès and Arrivat as a third form of surgical interference. The injected substance has been *pyoctanin* (methyl-violet) or more recently *trypanroth* (trypan-red), but neither has proved highly effective. *Alcohol*, also, from which great results were hoped, has been disappointing, and in addition it causes the patient very sharp pain. Such anæsthetics as *cocain* and *novocain* have been injected both into and around the tumour, and it was hoped that they would do good by

making it anæmic, but few save Spies seem to have been encouraged to persevere with them.

A fourth kind of surgical palliative treatment is found in different sorts of applications made to the tumour through the vagina. Vaginal *injections* of many kinds have been used, but they should be given gently to avoid injuring the cervix and setting up bleeding. *Plugs* also are useful, serving both to check the hæmorrhage and to relieve the suffering. In these ways astringents, sedatives, and antiseptics may all be employed. Calcium, coal tar, chloral, and ichthyol are specially named. With regard to Louge's and Reynes' *iodine vapour applications* Roziès and Arrivat speak somewhat hopefully, although they admit that sufficient information is not yet forthcoming to give assurance. The iodine fumes must be in a nascent condition, and they can be easily produced by burning a plug of cotton-wool impregnated with iodoform. It is well that they should play upon the cancerous cervix after the latter has been curetted or treated by ignipuncture in order that the deeper structures may be reached. The iodine is believed to act in four ways on the epitheliomatous tissue—as a deodorant, as a desiccant, as a sedative, and for its modifying effect. The fifth surgical plan is the old one of *curettage*, which, although in no degree curative, frees the patient for some time from hæmorrhage and discharge and stops any septic infection.

Cauterisation is often employed as a sequel to curettage, and it may also be used apart therefrom. This is the sixth method of treatment of a surgical kind. The caustic may be either chemical or physical. Thus Filhos recommends a stick of potash, and Fraenkel and others use chloride of zinc: but the vaginal walls must be protected, and this is usually done by placing plugs of wool impregnated with carbonate of soda in the fornices of the canal, in the fashion recommended by Tédenat. When the chloride of zinc comes in contact with the plugs it is changed into the harmless chloride of sodium. A great development has recently taken place in the physical means of cauterisation available. There are now five possible methods. There is, first, the old plan of the *galvanocautery* or thermocautery, with its point at red heat: the instrument is plunged into the cervical tissues and then the vagina is tightly packed. There is, second, *cauterisation by freezing*, or the use of carbonic acid snow: this has proved of benefit in small epitheliomas of the skin, but not so far in inoperable cervical tumours. Third, there is *hot air* applied by special apparatus, and requiring the use of a general anæsthetic. The hot air douche has been regarded as deodorant, desiccant, sedative, and bactericidal, but it is a question whether it really possesses any advantages over ordinary cauterisation with the thermocautery, at any rate advantages sufficient to warrant the use of the general anæsthetic, etc. About the fourth form of cauterisation, *fulguration*, a great deal has been written. Introduced

by Juge and Keating-Hart in 1908, this combined method of electric sparking and surgery excited at first immense interest, and early reports were most hopeful; but even in 1909 different views began to be expressed, and Quénu, Tuffier, Sébileau, Nélaton, and many others practically condemned it. Deaths began to be recorded, the cancer returned in some cases, it seemed to be made worse in other cases, and the technique was both complicated and delicate. Regretfully one has to pass from fulguration, for the picture painted by its early supporters was very alluring. It was claimed that it had immediate effects such as hæmostasis and analgesia, that it was soon followed by cicatrisation, and that its more distant result was fibrous formation in the affected tissues. The fifth method of cauterisation is *radium-therapy*, especially by means of Domenici's silver tubes applied deeply into the tissues of the cervix. Several tubes may be introduced at once at different points, constituting a "cross-fire" system. It is claimed that the results are destruction of the cells of the growth, transformation of the epithelioma into a papilloma, and resolution of the paracancerous infiltration. In all cases the symptoms seem to have been relieved; the pain has been modified, the fœtid discharge lessened, and the metrorrhagia checked. It has been stated that in some instances so great has been the resolution of the peri-uterine infiltration that inoperable cases have been rendered operable, but, further, in some instances complete cure has been registered, Domenici and Rubens-Duval having recorded three cases in which the cervix was found histologically free of cancer. But there have also been many failures. Still, there is a feeling prevalent that the last word has not been spoken on the radium treatment of inoperable carcinoma cervicis.

Dr. Roziès and Arrivat then pass in review the medical means of treatment, considering them under six headings. Under the first heading are placed such chemical agents as arsenic (in the form of Fowler's solution, of cacodylate of soda, of atoxylate, etc.), as quinine (by hypodermic injection or by inunction), and as chlorine (in such preparations as the chlorates of soda, potash, and magnesium); but no great results have been obtained from any of these medicines. Under the second heading are placed *ferments* and *organic extracts*. Beard is given first place in the practice of "fermentotherapy," and trypsin and extract of the liver are named, given either by the mouth or by interstitial injections. Proceeding on the assumption that certain internal secretions increase an immunity to cancer, some authors have given thyroid extract, extract of thymus, etc., in cases of inoperable cancer. Roziès and Arrivat do not speak hopefully of these means. In the third group of remedies we find *serotherapy* and *vaccinotherapy*. The former of these, working by passive immunisation, has been employed by Doyen, who used cultures of the micrococcus neoformans; by Bra, who used nectrianine; and by Adamkiewickz, who used cancroine; but

none of these obtained satisfactory results, and more recent attempts in the same direction have also failed. The latter (vaccinotherapy), working by active immunisation, has been experimented with by Borrel, Rovsing, Bertrand, and others: the malignant growth has been converted into an emulsion, and this has been injected, but nothing very hopeful can yet be said of this method, although the future may contain more satisfactory results with similar modes of treatment, for a true scientific principle underlies these plans.

Metallic salts form a fourth group of medical means of treatment. At first experiment was made upon salts which favoured the autolysis of the tissues *in vitro*, but in the case of animals affected with malignant growths the results were negative. Then it was found that certain organic compounds of the heavy metals (*e.g.* lead, vanadium, silver, copper) had a destructive action on cancer of mice comparable to that of the eosine selenium of Wassermann and of the choline of Werner. The same effect was produced upon the sarcoma of rats and the adenocarcinoma of the dog. In the November of last year (1912) Arthur Strauss published three cases of cancer which showed improvement under the salts of copper, and Gaube of Gers thought that in *cuprase* or *colloidal copper* he had found the curative agent for cancer. No sooner, however, was this statement made than adverse reports began to come in: Dr. Roziès, for instance, got only negative results in four cases of inoperable cancer under Professor Tédenat's care, and others (Durodié, de Boucaud, Mongour, and Bégouin) fared no better. Nevertheless, cuprase may be of some assistance: it is, at any rate, easy to give (by hypodermic injection into the gluteal region), not painful in its action, and not dangerous. In a fifth subdivision, by itself, Roziès and Arrivat have put electroselenium. Wassermann found that eosine selenium injected into the vein of a mouse suffering from cancer or sarcoma caused absorption of the growth, but the preparation was too toxic to be tried on the human subject. Fortunately, however, a colloidal compound of less toxicity was found in *electroselenium*, a liquid which had no dangerous effects, and which could be given either by intramuscular injections or intravenously. The immediate result of the injection was a rise in temperature, and, later, pain was relieved, the appetite was improved, sleep returned, and the cancerous masses diminished in size, whilst the ulcerative lesions dried up and the fistulous formations cicatrised. Clinically, good results have been reported by Cade and Girard, by Blumenthal and others, although Roziès and Arrivat have not been so fortunate; but even when no diminution in the size of the tumour itself has been noted, there have been obviously satisfactory improvement in the symptomatic troubles (pain, discharge, etc.). This leads on the last subdivision of the medical means of treatment, that of dealing with the symptoms and trying to cause amelioration of them, without hoping to stop the

disease itself. Now there are four symptoms which must be combated, viz: hæmorrhage, foul discharge, general loss of strength, and pain. For the first and second of these (hæmorrhage and discharge) surgical means are best, such purely medical measures as the internal administration of perchloride of iron, chloride of calcium, and ergotin being almost useless; for the third, such tonics as arsenic (cacodylate of soda), quinine, nux vomica, and condurango bark are of value, along with a nourishing diet; and for the fourth (pain) *pantopon* is very highly spoken of, and Roziès and Arrivat, in addition to personal experience which was favourable, are able to cite a long list of authors who also report well of it.

What, now, can be said of this review of the newer plans of dealing with cancer of the cervix in which the ordinary radical methods of surgical procedure are of no avail? It must be admitted that nothing more than palliation is at present to be looked for. The most hopeful plans seem to be radiumtherapy, the use of cuprase and electroselenium, and the replacement of morphia by pantopon (omnopon). In the existing state of our resources the most urgent need is still the early recognition of the malignant disease of the cervix uteri, so that radical surgical measures may get a fair chance of success. J. W. B.

THERAPEUTICS.

UNDER THE CHARGE OF

J. EASON, M.D.

Salicylates in Rheumatism.

Reginald Miller (*Quart. Journ. Med.*, 1913, vol. vi. No. 24) has collected the cases of active rheumatic infection admitted under Dr. Lees' care at Great Ormond Street Hospital for Sick Children during the three years 1902-4 inclusive, including all cases of arthritis, chorea, nodules, and rheumatic heart disease. The records are unique, in the sense that no one has so persistently or for so long employed salicylate as a specific for rheumatism. They have not been previously collected and studied. The records of 124 out of 152 were fully enough given to study the objections which have been raised against the employment of salicylate on these lines.

The importance of the series lies in the fact that all the cases were treated on salicylate by a physician ready to push its administration up to the limits of tolerance. In practically every case bicarbonate of soda was combined.

Miller's contribution is specially devoted to a critical examination of certain objections which have been urged against the practice of employing salicylate as a specific for rheumatism. Some of the objections raised are obviously irrelevant. Thus objections based on

argument from statistics dealing with the development or disappearance of cardiac bruits in numbers of rheumatic cases under this or that line of treatment are irrelevant unless other details are supplied. Objections based on statistics giving the period of in-patient treatment required in cases of chorea are of no value, the figures are so obviously vitiated by a variety of circumstances, not the least of these being the notorious difficulty of dating the cure of a case of chorea.

Again, an imperfect knowledge of the symptoms of the rheumatic infection has led some to conclude falsely that mental depression, cardiac depression, anæmia, headache, albuminuria, and hæmaturia are due to the salicylate. These are symptoms of the infection, and not necessarily or even usually dependent upon the line of treatment adopted, although the injudicious use of salicylate or the administration of an impure form might be responsible for aggravating such symptoms.

Miller then criticises the more relevant objections. The first of these is concerned with the absorption of the larger doses implied in the "specific" use of salicylate. It has been objected that these either remain unabsorbed and are evacuated by the bowel, or if absorbed produce toxic symptoms. This objection rests on two considerations: first, that acid intoxication is largely a question of the amount of the drug given; and secondly, that constipation conduces towards acid intoxication by increasing the amount of salicylate absorbed. Miller's view is that it is certain that constipation during salicylate treatment greatly increases the liability to acid intoxication, but it is not by any means certain that this is due to increased absorption of the drug. When constipation is present cases of acid intoxication arise on small doses or large doses. It is possible that constipation predisposes towards acid intoxication with salicylates in the same obscure way as it predisposes towards the similar condition in diabetes. But it does not follow that with large doses well borne a larger amount of the drug is not absorbed. At least in the case of other poisons no such beneficent mechanism is known. Again, analysis of the urine shows that the larger the dose the more of the drug is absorbed, even in the absence of constipation.

Another objection to the use of salicylate as a specific for acute rheumatism is that it is not practicable, inasmuch as the drug in large doses is too prone to produce harmful vomiting. This is an important objection, as salicylate has an irritant action on the stomach, and *a priori* larger doses should increase the tendency to vomiting. The simultaneous administration of bicarbonate of soda diminishes but does not entirely check this tendency. Dr. Lees' cases show that rheumatic children may vomit when no salicylate is being given. The common causes are the initial purge and cardiac dilatation. 8·87 per cent. of his cases vomited from these causes, the duration

of vomiting ranging from one to nineteen days: 54·83 per cent. did not vomit at all while undergoing salicylate treatment. Slight vomiting occurred in 35·5 per cent. of all cases under treatment. In most of these cases the vomiting was trivial and the drug was not omitted. Generally it occurred at the beginning or on increasing the dose.

Serious vomiting occurred in 9·67 per cent. of the cases under salicylate, *i.e.*, in 12 cases of the 124. In eight of these there was severe cardiac dilatation, which is a powerful predisposing factor to vomiting, although the drug itself is the exciting cause. The size of the dose is apparently of secondary importance to the condition of the heart. As the heart improves, vomiting ceases without reduction in the dose of salicylate. It is not denied that the size of dose has an influence, since salicylate is a gastric irritant, but if the heart is not much dilated an enormous dose may be taken without causing vomiting—a child of six years took 350 grains daily for ten days without vomiting. Speaking generally, the more dilated the heart, the less salicylate can be given without producing vomiting. In two others of the twelve acid intoxication developed. In both there was constipation. In the eleventh case the vomiting appears to have been the direct result of a very large dose, and the last appears to have been susceptible to the drug. Vomiting occurred on various doses such as are usually well tolerated.

After a careful sifting of the facts Miller concludes that the size of the dose is not the most important factor in producing vomiting. In whatever way the cases are analysed or subdivided it is impossible to correlate a marked tendency to serious vomiting under salicylate treatment with any type of case except one, namely, that in which the heart is much damaged. It has been already stated that in eight of the twelve cases of severe vomiting there was considerable cardiac dilatation. Of the whole series of 124 cases the heart was dilated two or more finger-breadths outside the left vertical nipple line, with or without acute pericarditis in 24 cases; while in three others the heart was severely enlarged from the presence of endocarditis. Therefore approximately 30 per cent. of the 27 had severe vomiting, while in 79 per cent. it was absent or slight. Of the remaining 97 cases only 4 suffered from severe vomiting. Two of these had constipation and acid intoxication, one showed idiosyncrasy towards salicylate, and one was apparently given too large a dose for the age of the child.

It is evident that the great tendency to vomiting shown in cases with severe cardiac dilatation must tend to limit the specific use of the drug as an anti-rheumatic in cases of active cardiac rheumatism. Another objection to the specific use of salicylate has already been mentioned incidentally. Large doses are prone to produce acid

intoxication. Two cases occur in the series studied by Miller. In both cases the symptoms were preceded by two days on which the bowels did not act. One patient was taking 150 grains of sod. salicylate and 300 grains of sod. bicarbonate, and the other 150 grains of aspirin daily. Drowsiness, vomiting, air-hunger, and acetonuria were present for 48 hours. The after-progress was satisfactory. Evidently large doses are not entirely responsible for the condition, as no case developed amongst those treated with the largest doses. Miller draws upon other instances which he has had the opportunity of watching, and has formed the opinion that acid intoxication need never be allowed to develop under treatment by any reasonable dose of salicylate, say, 250 grains *per diem*. He has nevertheless seen it develop many times in children taking only 60 grains daily, while others taking 400 grains daily had no symptoms of acidosis. It can be prevented, says Miller, by observing the following three points :—

(*a*) Constipation must be prevented, and the dose of salicylate should not be increased while there is constipation.

(*b*) The urine should be kept alkaline or neutral. If constipation be present, larger doses of bicarbonate are required for this purpose. Aspirin, which cannot be combined with soda, is less suitable from this point of view than sodium salicylate.

(*c*) The salicylate should be given in small doses frequently. To try to give a daily dose of 150 grains in only three or four doses is to court vomiting and severe symptoms of poisoning.

It has been objected also that salicylate is prone to do harm in various ways, so that it tends to increase rather than diminish the number of fatal cases of rheumatism. This is an objection frequently heard in conversation. In the series of 124 cases there were six deaths. In one of these the cause of death was diphtheria and broncho-pneumonia. Neither rheumatism nor salicylate contributed to the fatal issue. Excluding this case there was a death-rate of 4 per cent. In two of the five fatal cases salicylate was not being taken at the time of death nor for some time previously (six weeks and twelve days respectively), while throughout the illness salicylate had been little used.

A third fatal case was admitted *in extremis*, and the salicylate cannot be held responsible in any way for the death. The fourth case was one of severe valvular disease with adherent pericardium. During the six weeks he was in hospital he was very ill. He vomited with and without salicylate, but not very much. At the time of his death he was taking 120 grains daily. There was some vomiting, but it does not appear that the salicylate did harm, the child getting gradually worse throughout. His cardiac condition was quite enough to account for his death. The salicylate throughout in the doses employed

seemed powerless to improve his condition or affect the temperature. In the fifth fatal case it was very clear that salicylate had nothing to do with the cause of death. If the drug has any power in cutting short the infection, death was due rather to lack of it. None of the fatal cases died of salicylate poisoning, and every case can be explained fully without supposing that salicylate had any detrimental effect on the patient.

An objection to the specific use of salicylate is that it is unsound because the drug does not prevent relapses or the development of nodules. Rheumatism is an infection which is notably prone to relapses, particularly in children. In the series of 124 cases, 17 (13·7 per cent.) showed relapse. One case relapsed twice. Relapses were more common in the severe cases than in the mild. The relapse occurred in six instances when not taking salicylate, and in eleven when the drug was being administered. In some of the six fresh symptoms continued to develop after the drug was resumed. In spite of these figures Miller does not believe that salicylate predisposes towards relapses. There were comparatively few not having salicylate. Fourteen of the seventeen relapsing cases developed their relapse on or after doses of not more than 100 grains of salicylate *per diem*. In the 17 cases there were 23 relapsing rheumatic manifestations. The two forms which figure most frequently are arthritis and nodules. It has been argued that salicylate does not help the disappearance of nodules. It certainly cannot be expected to absorb the nodules, but if it can be shown by other means that salicylate tends to cut short the activity of the infection, it is doing all that an anti-rheumatic drug can be expected to do to hasten their disappearance and also to prevent further formation of them. But it is also true that nodules may develop under treatment by salicylate, even in full doses. In this series nodules developed during treatment in five instances. In three of these the drug had been given either in very small doses or for a very short time. In only one case nodules developed when salicylate was being given in large doses, but the infection seemed to be well under control, and the disappearance of the nodules was rapid. When nodules develop under large doses it seems that they signify little, if any, fresh activity on the part of the infection. J. E.

OPHTHALMOLOGY.

UNDER THE CHARGE OF

W. G. SYM, M.D., F.R.C.S., AND ANGUS MacGILLIVRAY, M.D., D.Sc.

Etiology of Chronic Glaucoma.

WITHIN recent years a great deal of attention has been directed to the operative treatment of this progressive and almost intractable disease without attempting in the same degree to determine the etiology of

the disease. Consequently the operative treatment of chronic glaucoma is still deeply immersed in empiricism.

At a symposium of the Chicago Ophthalmological Society (*Annals of Ophthalmology*, April 1913) dealing with chronic glaucoma, Dr. Martin H. Fischer of Cincinnati, in opening the discussion, made a most valuable contribution to the subject. He described glaucoma as an œdema of the eyeball, all the clinical signs of this pathological entity being so explained. The eye, like any other tissue in the body, holds normally a certain amount of water. The amount thus held is determined by the hydrophilic colloids of the eye (the proteins chiefly) and the state in which these exist. Œdema is a condition in which the amount of water thus held is increased. In glaucoma the hydration capacity of the tissues of the eye (including the vitreous and aqueous humours) is increased. Various conditions are able to increase the hydration capacity of a protein colloid and so to lead to an œdema of the affected part. A most important factor in this regard is an increase in the amount of acid present in the part. Any circumstance which will lead to an abnormal production or accumulation of acid in the eye will lead to glaucoma. What are ordinarily classed as causes of glaucoma (arteriosclerosis, circulatory disturbances, kidney disease, hard mental or muscular work, worry, high protein diet, diabetes with acidosis, local circulatory disturbances in the eye, intoxications of a general or local type which affect the eye, injuries and operations affecting the eye, cold, starvation, etc.) all have this in common, that they lead to an abnormal production or accumulation of acid in the eye. In consequence of this abnormal acid content the hydration capacity of the ocular colloids is raised and a glaucoma results, not because water is pushed into the ocular colloids, but because these suffer changes which make them suck in water from any available source. Obliteration of the filtration angle is not the cause of glaucoma, but a consequence resulting from the fact that in glaucoma the colloids behind the lens swell more than those in front, and so the lens and iris are crowded forward. As the swelling progresses the glaucomatous eye tends to make itself worse, for in swelling it compresses the blood-vessels within the eye and so adds to its already precarious state the superimposed effect of a lack of oxygen due to defective blood-supply, and so by the resulting further abnormal acid production and accumulation a vicious circle is established. Eserin and other drugs, which by contracting the iris open up the vessels in the ciliary body and so give a better blood-supply, may therefore at any time be successful in removing a last straw which makes an eye just on the edge of a glaucomatous attack go over: on the other hand, atropin, cocain, and similarly acting drugs have a reverse effect, favouring not only a compression of blood-vessels, but adding a direct toxic effect, which in the end leads to an abnormal production and accumulation of acid. In the treatment of glaucoma we

must first get as clearly as possible before our minds all the conditions which in our patient are leading to an abnormal production or accumulation of acid in the eyeball. Rarely will only one etiological factor be responsible. An abnormally high acid content may be induced in one eye quite as easily through an abnormal acid production which results from too hard muscular work, a leaking heart, or a bad dietary régime; an arteriosclerosis that manifests itself especially in the circulatory apparatus of the eye: an inflammation of the ciliary body; or a cataract extraction. When we have removed as many of these conditions as possible we then meet the effects of those which we cannot remove. We need to give alkalies to neutralise the acids present in abnormal amounts; we need to increase the salt content in the tissues of the eye, for all salts, including such neutral salts as sodium chlorid, decrease the amount of water that can be held by any protein swelling in the presence of an acid; and, finally, we need to give water to wash out the acids (and any other substance), which are capable of increasing the hydration capacity of the ocular colloids. In actual practice this is accomplished as follows:—

As the patient is usually in the midst of a glaucomatous attack at the time that we see him, we describe the handling of this picture first.

1. It is our purpose to dehydrate the swollen eye as rapidly as possible. To accomplish this we may use either local or systemic means, or both. To obtain a dehydration of the eye by systemic means we stop the intake of water by mouth and inject slowly into the rectum by the drop method, having the patient retain a litre or, if necessary, two litres, of the following alkaline hypertonic sodium chlorid solution:—Monohydrated sodium carbonate, 4·1 grms.; sodium chlorid, 14·0 grms.; distilled water, 1000 c.c. When the injection is properly given, the alkali and salt content of the patient's body is increased and the swollen eyeball shrinks. In from one to three hours the glaucomatous eye will then have returned to its normal tension. During the past year Fischer had found a proper utilisation of this scheme of treatment so effective that he had relied upon it entirely, and so has largely given up the use of subconjunctival injections of sodium citrate. Once the tension in a glaucomatous eye has been reduced, the patient must be kept from getting renewed attacks by keeping metabolism constantly toward the alkaline side. This means that the patient must be taught how to inhibit his acid-producing factors while at the same time he is placed under the influence of a sustained administration of alkalies, salts, and water. Only in this way can an eye on the verge of a glaucomatous attack from such a condition as an arteriosclerosis of the blood-vessels of the eye be kept from a severe attack, as the acid content in the eye is pushed beyond these tolerable limits by work, worry, dietary indiscretions, etc.

2. Local treatment in glaucoma resolves into an administration

subconjunctivally of harmless salts to reduce the hydration capacity of swollen colloids. A freshly prepared sterile sodium citrate solution (5·41 per cent. solution of the ordinary chemically pure $Na_3C_6H_5O_7 + 11\ H_2O$) is used. Enough must be injected to distend gently the subconjunctival tissue (ten to fifteen drops). The short-lived pain following such an injection may be relieved by alternate hot and cold compresses. Failure to get a prompt reduction by such means indicates that the solution was of wrong composition, or that enough was not injected, or that the systematic acid content was so high that use of the salt subconjunctivally did not even temporarily prove effective. What is known as glaucoma in the eye is identical with the series of changes which in the kidney we call nephritis, and the principles of treatment governing both conditions are the same. A. MacG.

MEDICAL REPORT, C. M. S. HOSPITAL, HANGCHOW.

The following extracts from the Medical Report of the Hangchow Hospital for 1912 by Dr. Duncan Main will be read with interest, as showing the work which falls to the lot of the medical man in the Far East.

The most common diseases among the Chinese are tuberculosis, malaria, digestive disorders, worms, skin diseases, eye diseases, venereal diseases, ulcers, and rheumatism.

Smallpox was as prevalent as in previous years, and considering the facilities now afforded for vaccination, it was excessive. Inoculation of smallpox in the nose of infants with the powdered scab of a mild case is still practised in spring a good deal, but the Chinese are more and more giving it up for vaccination: still, so far, very few seek to have it done at the beginning of the smallpox season, thinking that the spring is the best time for it, which is a mistake. They are also awakening to the fact that vaccination from the scab of another patient is dangerous and that disease may be communicated thereby, and that many deaths are caused through this septic method.

Vaccination is gradually becoming more popular among the people, and there are many quacks at present who are doing a good business in the profession. The method of inoculation by the nose is followed by an attack of smallpox within a week's time, and the severity of the attack depends on the dose blown up, as well as the virulence of the poison in the scabs used. Not a few of the unfortunate children succumb every year as a result of this malpractice: many have disfigured faces: some get partially or completely blind: and several such cases of blindness as the sequel came under our treatment.

Unclassified fevers are common and most puzzling, particularly at the changes of the seasons—in early summer and late autumn. They are neither malaria nor typhoid nor, apparently, typhus, and are most

difficult to control. Some are three-day fevers, some are of the seven-day, some are of the seven weeks and more type, while some are relapsing fever, pure and simple, and should not be included in the group of the unclassified, except that it is often not possible to demonstrate the presence of the spirillum obermeieri. In no instance has any protozoal organism been found in the body fluids in the types first mentioned. Examination of fæces has also proved negative. The mortality of these fevers is practically nil, but they are followed by a tedious convalescence out of all proportion to the severity of the attack. The symptoms are headache—often severe—lassitude, constipation, and coated tongue, pains in the back and limbs, and often but not always profuse sweatings, sometimes localised about the shoulders and nape of the neck. The fever is usually highest in the afternoon, and always lower in the morning, and when severe is of a remittent type. Some cases complain chiefly of nausea and sometimes vomiting. Blood examination shows nothing.

The signs to be found are equally unsatisfactory. The spleen is slightly enlarged, not markedly as in malaria and typhoid, and not more than might be expected from the amount of fever present. I have never found any glandular enlargement, nor any rash. No drugs are really necessary, and quinine only distresses the patient unnecessarily. I usually, however, prescribe regular doses of phenacetin and aspirin, 5 grains each, every four hours, combined with the citrate of caffeine to prevent cardiac depression. This is employed not as a curative agent but to minister to the patients' comfort. I have tried many drugs, but all seem equally useless.

Convalescence is sometimes very protracted; the too sudden assumption of any solid food, or mental excitement of any kind, is often sufficient to cause a relapse.

Opium Smoking.—The reports received from all over the country clearly show that China is putting down the opium traffic by the most drastic methods. The chaos brought about by the Revolution may have given poor farmers, in some few places, a fresh stimulus to run the risk of planting another crop, but there is no doubt now about the improvement in the work of suppressing opium growing and smoking everywhere. It may be a serious thing to relieve a nation from a treaty whereinto she willingly entered, but the spirit of the agreement, we must remember, was to help China in her efforts to suppress the vice, and the agreement clearly states that Great Britain recognises the sincerity of the Chinese Government's efforts to suppress the opium traffic. It is no use China trying to prevent by force the importation of the drug, because she cannot do it. Her best course is to do what the Treaty sanctions doing—viz. putting down opium smoking all over the country, and thus make clear to the world that she is sincere in her efforts to get rid of the drug. And here she claims help from without

as well as from within. We believe China is now determined to get rid of the habit, and the cordon of prohibition is being drawn tighter and tighter, and not a few have been hunted down and compelled to come to us to be cured against their wills. It is very difficult, besides being very expensive, to buy the drug now, and it is even difficult to buy medicines which are supposed to cure but are really "made to sell": it is also going out of fashion, and is no longer considered a luxury, and there are many giving it up because they feel they are slaves to it, and that it is undermining their health, sapping their will, and destroying what moral power they have. During over thirty years' experience in curing opium smokers we have tried many of the drugs in the pharmacopœia without finding a specific; bromides at first, then stomachic aromatics, and afterwards tonics backed up with kind words, constant supervision, and a strong will, produce the best results. We have never really favoured the "gradually-weaning process," although we have sometimes tried it, and feel sure that the "sudden-cutting-off plan" is, on the whole, the most satisfactory.

Leprosy.—Those of us who are engaged in medical mission work are often fascinated and sometimes perplexed by the number of problems in pathology, diagnosis, and treatment which daily confront us. Constantly do we meet with cases which at first are complete puzzles. The symptoms are often masked or aggravated by native treatment, and it is not easy to make out what is disease and what is due to malpractice, while the history given by the patient or his friends is often false and unreliable. Leprosy in its early stages is not easily diagnosed, and as a rule is seen by most of us for the first time in China, where there is no lack of material for observation. Those who have no accommodation set apart for leper work feel very hopeless when they are called upon to treat it. So far, no one as yet has discovered a remedy that has stood the test of time and experience, though many drugs have been used. We have given many medicines a very thorough trial, but have not found any one specially efficacious. Chaulmoogra-oil seems to do good in the early stages of the disease, but in the tuberculated form only. I have seen very marked improvement in two cases that were treated by Chinese medicine, the composition of which I did not know: in these cases the discoloration passed away, sensibility in the hands and feet were restored, the eyebrows which had fallen out returned, the mental dulness became better, the ulcers on the feet healed up, and the clumsiness of the gait improved very much. When we were rejoicing that a cure was apparently in sight, one patient died suddenly, and his death affected the other one so much that he became insane and died within a week. Many of those who come to us improve for a time without any special treatment. Fresh air, good food, and healthy surroundings do much for them, but when they are placed under treatment by a

new remedy, especially if that remedy is brought by one who declares that it cured himself, the mental attitude is brightened by the hope of recovery, and they unconsciously exaggerate their feelings and make you believe they are much better than they really are. Nastin, samoin, and lepralin have not with us produced favourable results. One or two cases seemed to improve a little when the treatment was first commenced, but I am inclined to think the improvement was not due to the drugs, but to the mental stimulus, because others were really worse with the treatment, while most of the cases remained unchanged. I am not able from my experience to confirm all that is said for nastin. We have had a serum made from one of our patients, and after three injections he seemed to improve somewhat, and I am very hopeful of this line of treatment, and believe that before very long we shall have an antitoxin that will effectively deal with the lepra-bacillus. Those who come to us have, as a rule, gone the round of the native physicians of fame, spent all their money, and are not cured; some come only for us to confirm their own or their friends' diagnosis; others come because of the wonderful things we get the credit of doing. Most of those who enter the Refuge stay with us till they die, but a few leave us, usually after a few days or weeks, and always because they see no signs of improvement. They are anxious for immediate results, and although they have been ill for years and swallowed medicine by the gallon, when they come to us they expect the first dose to go right to the spot, and if it does not, they are disappointed and make some excuse for leaving us. A very common one is that their mother is ill and just about to die, and they must hurry home before the end comes. In the early days I used to think that the bacillus entered the body through the skin of the exposed parts—face, hands, and feet, the feet being affected in those who do not wear shoes and stockings, and not affected in those who do, at least in the early stages. At first I noticed it in the feet of farm servants who worked in the rice fields up to the knees in the mud; this kind of work lowers the vitality of the skin and often produces dermatitis, which might make a path of entrance for the bacillus. Later I leaned a little to the decayed fish theory, because we had all the conditions here which favoured it. The fish in this district is all sun-dried, and the temptation to use too little salt in curing it is very great, but so far the bacillus has not been found in decayed fish, and until it has we cannot hold without wavering to that theory. It may probably enter by the alimentary canal, and also by the nose and throat, and perhaps through the skin as well, but now I am inclining towards the possibility of bugs, lice, fleas, flies, and mosquitoes playing an active part in the transmission of the disease. The longer I live the more I am convinced that these insignificant little creatures are the cause of much sickness and many deaths. More ought to be done to get rid of rats, flies, and mosquitoes.

Brigades should be formed and vigorous campaigns organised against them, and a price put upon their heads, so that Chinese may join us in the fight against them: and all hospitals and mission houses should have wire gauze, and be made rat, fly, and mosquito-proof. There can be no doubt that the ordinary house fly is a disease carrier of the first magnitude, and everything possible should be done to get rid of it.

NEW BOOKS.

Anaphylaxis. By Professor CHARLES RICHET. Translated by J. MURRAY BLIGH, M.D., with a Preface by T. R. BRADSHAW, M.D. Pp. 286. Liverpool: The University Press. 1913 Price 3s. 6d. net.

THE fact that serious effects may follow on a second injection into the animal body of a primarily non-toxic proteid is now recognised to have a far-reaching importance in practical medicine. Not only does it throw light on the untoward incidents of antitoxin administration and on the *rationale* of the tuberculin reaction, but it opens up the way for the elucidation of the idiosyncrasies to certain foods exhibited by many individuals, and of many obscure conditions, such as hay fever, urticaria, and, it may be, some skin diseases. In these circumstances not only the pathologist but the clinician will welcome the appearance of an English translation of Professor Richet's well-known book on anaphylaxis. In this volume the phenomena of the hypersensitive state and the varying conditions under which it may be originated are fully discussed, and the value of the work is all the greater in that the views of different investigators are fully and fairly set out. The complex questions arising are treated with lucidity, and the recognition that many of the conclusions arrived at must be looked upon as tentative is calculated to stimulate the reader's interest. To originate such a mental attitude is eminently desirable, as there are many obscure clinical phenomena on which fresh light will be shed if they are viewed from the standpoint that hypersensitiveness may play an important part in their development.

This book can be heartily recommended on its merits. It only remains to be said that the translator has admirably succeeded in giving it an English dress. At the same time greater care might have been exercised in reading the proofs.

Gynecological Diagnosis and Pathology. By A. H. F. BARBOUR, M.D., and B. P. WATSON, M.D. With 8 Plates and 202 Figures. Edinburgh and London: William Green & Sons. 1913. Price 7s. 6d. net.

THIS work by two eminent teachers and investigators fills up a distinct gap in our gynecological text-books, and will prove of great value to students and to those who are carrying on detailed investigation of the many specimens now obtained by operation.

In the first 32 pages a good general account is given of the methods of gynecological examination, while the remaining 180 pages are occupied with a detailed description of gynecological pathology, both in its naked-eye and microscopic aspects. To each organ considered is prefixed a valuable account of its normal naked-eye and microscopic anatomy, and incidentally a good deal of clinical information is given of the conditions treated.

All the descriptions and explanations are excellent and fully up to date as a rule. The frequency curves of the age-incidence of fibromyomata and carcinoma are most instructive, and were published by the senior author many years ago, thus anticipating in gynecology at any rate modern biometric methods of stating results. The chapters on endometritis, fibroids, carcinoma, and tubal gestation are among the best.

The paragraphs on secondary ectopic gestation are not as clear and exact as the others, and J. W. Taylor's work should have been considered. There is, however, little scope for criticism on the whole.

The coloured illustrations are exceedingly good, and the artist and the engravers must be congratulated on the result. Plates I., III., IV., and VI. seem to us the best. The process blocks are also good, and are mostly from original specimens. The typography of the book is of a high order.

The authors are to be congratulated on the successful result of what must have been a prolonged and arduous task.

Diseases of the Skin: A Handbook for Students and Practitioners. By DAVID WALSH, M.D.(Edin.), Senior Physician, Western Skin Hospital, London. Pp. 298. London: Baillière, Tindall & Cox. 1913. Price 6s. net.

So many treatises of moderate length dealing with diseases of the skin have recently appeared, that when a fresh one comes out we are led to inquire what reason there is for adding another to the number. Apparently Dr. Walsh bases his claim to originality on two grounds. One, that he assumes priority in suggesting that not a few skin eruptions are symptomatic of excretory irritation; and again, that while it has been the custom of some writers to refer the origin of many cutaneous affections to the nervous system, though, to his mind, unsupported by a single clinical or pathological fact, the vascular system has been strangely neglected. He holds the view that some abnormal vascular condition, central or peripheral, is responsible for numerous chronic or recurrent skin disorders. This he associates with functional weakness of the myocardium in some, with evidence of valvular disease in others. There can be no doubt that much valuable light is often thrown on many cutaneous ailments if a thorough examination of all the systems is carried out, but we are scarcely disposed to go as far as the author

in incriminating the blood-supply to the exclusion of the nervous system. Although in the habit of listening to the heart in most instances, we cannot say that we have found "a valvular heart murmur in the majority of cases of obstinate rosacea," or in a large proportion, amounting to 70 or 80 per cent., of examples of chronic and recurrent psoriasis. His advocacy of thyroid gland preparations in the treatment of various dermatoses is surely at variance with his theory of the prevalence of heart disease in such. While it is evident that he has devoted time and care to the study of his subjects, the descriptions given too often err on the side of insufficiency, while unnecessary repetitions occur. His syntax is at times somewhat provoking, as when he employs such phrases as "they appear rarely," "suggesting strongly," "they affect especially." Names are misspelled – thus Vlemingkx becomes Vleminx, and Pick appears as Peck. The formula for the old-fashioned iron and sulphate of magnesia mixture is impossible as it is written on p. 137. The author thinks that there is room for a simple and concise introductory handbook on the subject, but we regard the work we are reviewing as superfluous.

Diseases and Injuries of the Eye: A Text-Book for Students and Practitioners. By WILLIAM GEORGE SYM, M.D., F.R.C.S.E. Pp. 493. London: Smith, Elder & Co. 1913. Price 7s. 6d. net.

IN writing this text-book the author's aim has been to supply a useful guide rather than to discuss obscure or disputed points in ophthalmology. While, however, stating prominently the accepted opinions, he has on several moot points given a frank expression of his own views which makes the work interesting to ophthalmologists as well as to those for whom it was specially written.

Copiously illustrated in line and colour, the book covers the whole ground in a thoroughly practical manner. Various questions of special importance to school medical officers are discussed, and will be found useful. The chapter dealing with compensation for injuries contains many valuable hints, and is exceedingly well written, sins of omission and commission being specially emphasised.

The volume, coming from the pen of one who has had an extensive and successful clinical experience based on a comprehensive and accurate knowledge of the literature of the subject, will be found to be a safe and reliable guide. We heartily recommend it to students and practitioner alike.

Studies on the Influence of Thermal Environment on the Circulation and the Body-Heat. By EDGAR R. LYTH, M.B.(Durham), M.R.C.S. (Eng.). Pp. 72. Fifteen Charts. London: John Bale, Sons & Danielsson. 1913. Price 2s. 6d.

THE purpose of this book is to show in a graphic manner the various ways in which the cutaneous and rectal temperatures, pulse-rate, and

blood-pressure react to alterations of thermal environment. The changes which are produced in the circulation by varying external temperatures are, for the most part, generally recognised. It is, however, both interesting and instructive to have graphic proof, in the form of careful charts, of these circulatory phenomena. The writer departs from the usual terminology in dealing with blood-pressure, which is unfortunate and apt to lead to confusion. It is worthy of note that he attempts to gauge roughly the work done by the heart in a given time by multiplying the sum of the two pressures by the pulse-rate. It would indeed simplify the difficult problem of sphygmobolometry if even an approximate estimate of the cardiac energy could be made from such simple data, but it is extremely doubtful if such an assumption is warranted. The writer has made a very large series of observations, and his experiments have been conceived and carried out with considerable ingenuity and with a praiseworthy attention to detail.

Clinical Pathology. By P. N. Panton, M.A., M.B., B.C.(Cantab.) Pp. 433. London: J. & A. Churchill. 1913. Price 12s. 6d.

The author is to be congratulated upon the production of a work of great practical utility confined to a reasonable bulk; for there is no endless reduplication of methods, only one, or at most, two for achieving the same object being given, and matter of purely scientific interest is omitted altogether.

The substance of the book may roughly be divided into three parts, dealing respectively with routine sideroom work, with the preparation and examination of histological sections, and with bacteriology proper. This last section is very comprehensive, including the preparation and use of vaccines, and an account of the properties and reaction of the blood serum.

All through, technique is clearly laid out, and the accounts of special processes, as the Wassermann reaction, are exceptionally lucid.

The volume is well bound, clearly printed, and the illustrations, of which eleven are coloured plates, are admirable.

As an adjunct to the sideroom library, and as a full handbook for such laboratory investigations as have a practical bearing upon the diagnosis and treatment of disease, the book is to be cordially recommended.

How to Diagnose Smallpox. By W. M'C. Wanklyn, B.A.(Cantab.), M.R.C.S. Pp. 104. London: Smith, Elder & Co. 1913. Price 3s. 6d. net.

This little book has been written for the assistance of those who have not had the opportunity of becoming familiar with smallpox. The importance of accurate diagnosis of a disease which, in the present unvaccinated state of the community, will almost certainly spread

with great rapidity if the earliest cases are not recognised can hardly be overestimated. The author's vast experience of smallpox renders him an eminently safe guide, and we are pleased to note that he follows whole-heartedly the methods of diagnosis associated with the name of Dr. Ricketts, the distribution of the eruption being the point most emphasised. The book is clearly and ably written, is very readable, and is admirably illustrated. While it is probable that the advantages of the methods of examination recommended are fully appreciated by most medical officers of health and fever hospital superintendents, it is undoubtedly the case that they are at present unknown to the average general practitioner, and it is to be hoped that this little work will attain the success which it undoubtedly deserves. We can most conscientiously recommend it, with the reminder that it is a book to read at once, and not to be resorted to after mistakes in diagnosis have already been made. The man who masters its theory is preserved at least from making really gross errors.

NEW EDITIONS.

Cunningham's Text-Book of Anatomy. Edited by ARTHUR ROBINSON, M.D., F.R.C.S.(Edin.), Professor of Anatomy, University of Edinburgh. Fourth Edition. Pp. 1596. With 1124 Illustrations; 637 printed in Colours. London: Henry Frowde and Hodder & Stoughton. 1913. Price 31s. 6d. net.

WHEN it first appeared in 1902 *Cunningham's Anatomy* at once took its place as the standard work on the subject in the English language, and with each new issue it has only strengthened its position.

The general editorship of the fourth edition, now before us, has been placed in the able hands of Professor Robinson, who has enlisted the aid of Professors Elliot Smith, R. J. A. Berry, A. Campbell Geddes, and David Waterston in the revision of the sections originally written by Professors Cunningham, Birmingham, and A. H. Young, whose loss anatomy has had to bear since the last edition appeared. We can pay no higher compliment to the new contributors than to say that they have maintained the standard set them by their predecessors.

The Basle nomenclature has been adopted throughout, and we confess that a closer acquaintance with it helps to remove many of our prejudices against what at first sight appeared an uncalled-for disturbance of the established order of things. Those who are only familiar with the old terminology will find the glossary provided by Mr. J. Keogh Murphy most useful, but we feel that it was perhaps a little premature to drop so many of the old terms from the index all at once. It will be a considerable time before a generation arises which knows only the new terms, and there may be some difficulty in finding old friends under their new names.

It is evident that the whole text has been thoroughly revised and the subject-matter brought up to date. Many new illustrations have been added, and these are of the same standard of excellence as we have become accustomed to in this work. The publisher's share in the production of the volume leaves nothing to be desired.

A Manual of Venereal Diseases. By Sir Alfred Keogh, K.C.B., C. H. Melville, R.A.M.C., Sir William Leishman, F.R.S., and C. E. Pollock, R.A.M.C. Second Edition, revised, with new matter by L. W. Harrison, R.A.M.C. Pp. xvi. + 318. London: Henry Frowde and Hodder & Stoughton. 1913. Price 10s. 6d. net.

The first edition of this manual was published in 1907, and was, deservedly, well received. The second edition, now before us, has, like so many other second editions, grown out of all resemblance to the modest little book that slipped so easily into the pocket. The immense amount of research work and new information relating to syphilis has, however, made this inevitable. Nor can it be said that the volume contains unnecessary padding, or that it is yet too large in size to be comfortably carried about. The addition of Major Harrison to the editorial staff has distinctly enhanced its value, and his chapters on the pathology of syphilis and on the salvarsan treatment are excellent. The section on serum diagnosis (about 52 pages) is, we think, too long in proportion to the rest of the letterpress, but it contains much new and instructive matter set forth in a clear and interesting manner. In the author's experience a positive Wassermann can be obtained when the primary sore is fifteen days old "in the majority of cases."

Gonorrhœa is dealt with in a satisfactory manner, and recent methods of treatment, including the local application of heat by means of bougies, are included.

We can heartily recommend the manual.

The Examination of Waters and Water Supplies. By John C. Thresh, D.Sc., M.D., D.P.H. Second Edition. Pp. 624. London: J. & A. Churchill. 1913. Price 18s.

This second edition of Dr. Thresh's well-known work on *The Examination of Waters and Water Supplies* is worthy of a still more favourable reception than was accorded to the first. The present edition has been to a great extent rewritten, and most of the sections have been extended and amplified in accordance with the wider experience of the author. Dr. Thresh has to a great extent revolutionised the methods of water analysis, and his simplified and accurate methods are now very largely employed by water analysts.

Some years ago conclusions as to the purity or impurity of a

water were deduced from a chemical analysis alone. Later, the bacteriological examination of the water almost ousted the chemical analysis. Dr. Thresh, as a result of his wide experience, states that the inferences drawn from many so-called bacteriological examinations are often as fallacious as those deduced from the results of chemical analysis. He says that the great difficulty does not lie in obtaining the results of the analysis, but in correctly interpreting them. Dr. Thresh was the first to lay stress upon the examination of the sources of the water supply. This often gives far more accurate information than is obtained by any chemical or bacteriological examination. The numerous tables of complete water analysis which the author gives will prove of the greatest value, and we cordially welcome this new edition of an already popular manual.

Practical Guide to the Diseases of the Throat, Nose, and Ear. By William Lamb. Third Edition. Pp. i.-xvi. + 352. 57 Illustrations. London: Baillière, Tindall & Cox. 1913. Price 7s. 6d. net.

This edition is a great improvement on the previous ones. It has been thoroughly revised, and is in every respect a sound and trustworthy guide to the practitioner and student in the subject-matter with which it deals. It is essentially a practical manual in which the technique of the examination of the patients, the diagnosis and treatment are carefully, concisely, yet attractively described. The illustrations are good, many of them original, and one may specially draw attention to those sections of the skull illustrative of the accessory sinuses. It also contains well-selected formulæ and a good index.

In the first section of the book, dealing with diseases of the mouth, pharynx, and naso-pharynx, the author very properly points out the great importance of oral sepsis from its prognostic as well as from its therapeutic points of view in relation to chronic toxæmia with its many varied symptoms.

Tonsillectomy is fully and carefully described both as carried out by the guillotine and by dissection methods.

The next section, which is devoted to the nose, is specially considered in detail. The anatomical and physiological description with the examination of the patient is written in a very lucid and interesting manner. The importance of the conservation of the turbinal tissue in operative measures, whenever possible, we are glad to see is strongly advocated. The submucous nasal resection operation is fully and clearly set forth. Lamb points out that frontal and sphenoidal disease is nearly always secondary to lesions of the ethmoidal cells, which he regards as the key to all sinus affections.

In the laryngeal section no mention is made of the direct method of examination and treatment, an omission which no doubt will be alluded to in a future edition.

In discussing the usual tests for hearing we think an unfortunate description is given in regard to Weber's test, the author using the terms positive (Weber +) and negative (Weber −), which otologists usually apply exclusively to Rinne's test. The symptoms and treatment of labyrinthine disease are handled in a rather cursory fashion, only a few lines being devoted to inflammation of the labyrinth, while no mention is made of any operative proceedings on this highly important organ. The author is, however, to be congratulated on producing such an eminently practical and useful manual, which we can thoroughly recommend.

Laboratory Handbook of Bacteriology. By Professor R. Abel. Second English Edition. Translated from the Fifteenth German Edition by M. H. Gordon, M.A., M.D.(Oxon.), B.Sc., with Additions by Dr. A. C. Houston, Dr. T. J. Horder, and the Translator. Pp. 251. London: Henry Frowde and Hodder & Stoughton. 1912. Price 5s.

That the German original of this little book has already passed through fifteen editions is ample proof that it fills the proverbial "long-felt want" not supplied by the ordinary text-books on the subject, and we welcome the second English edition. The first edition appeared six years ago, and so many new methods have been since introduced that it is now distinctly out of date. It well deserves the new lease of life given to it, and the second edition is likely to have a still wider circulation, as much new and useful matter has been added both by Professor Abel and by Dr. Gordon and his helpers.

The book is eminently practical, and contains no unnecessary padding. It does not profess to be exhaustive, and doubtless anyone working with it will find familiar methods omitted; but in spite of this it is wonderfully complete, and will be of great use both to the laboratory worker and to the practitioner.

A few inaccuracies and several somewhat important omissions might be made good when the book reaches its next edition; and the possibility of printing it upon thinner paper, in order to reduce its thickness if used as a pocket-book, might also be considered. On p. 21, in describing titration of culture media with phenolphthalein as indicator, the instruction is given to "titrate with $\frac{N}{20}$ NaOH or HCl until the fluid develops a brilliant red colour." With the latter reagent this would take a long time to occur! *M. melitensis* receives no mention. Phosphate blood-agar might be given as a useful medium for the growth of the gonococcus. One distinctly weak point is the index, which is scanty and incomplete, and by no means does justice to the contents of the volume. In spite of these minor criticisms we can very heartily recommend the book.

NOTES ON BOOKS.

TRANSACTIONS, REPORTS, ETC.—We have received the sixteenth series of the *Medical and Surgical Reports of the Boston City Hospital*, edited by Drs. Monks, Sears, and Mallory. It contains an interesting series of papers by members of the staff, some of them appearing here for the first time, others being reprints of articles previously published.

The twelfth volume of the *Reports of the Laboratory of the Royal College of Physicians of Edinburgh* (Oliver & Boyd, 1913) contains a collection of papers of great scientific value. They are arranged under the headings of Anatomy, Pharmacology, Pathology and Bacteriology. As the papers have all appeared previously in current journals, we need not do more than record their issue in this collected form.

We have received the ninth volume of the *Medical and Surgical Report of the Presbyterian Hospital, New York*, edited by Drs. John S. Thacher and George Woolsey. It contains a valuable collection of papers emanating from the various departments of the hospital. Most of these have already appeared in the current American medical journals, but in their present form they are more readily accessible for reference. The volume is clearly printed and well illustrated.

The Transactions of the College of Physicians of Philadelphia (third series, vol. xxxiv., 1912) contains the papers read before the College during 1912, but the College holds itself in no way responsible for the statements, reasonings, or opinions set forth in them. In all there are 28 contributions which have a direct bearing on clinical work. The treatment of epilepsy is considered from the medical side in three papers by Weir Mitchell, Dercum, and Shanahan, and from the surgical side by Taylor and Frazier. Kolmer and Schamberg describe some experimental studies on the administration of salvarsan by the mouth to animals and men. Their conclusion is that the drug exerts a therapeutic influence, but in too feeble a degree to warrant its employment in this way. It is rather surprising to see so many surgical papers in a volume published by a college of physicians. This remark applies particularly to such papers as that by Roberts on "Death in Two Cases of Operative Fixation of Fracture of the Femur," and that by Deaver, "A Review of 534 Operations upon the Mammary Gland." There are interesting contributions by Talley on "The Prognostic Significance of the Atropine Reaction in Cardiac Disease," by H. A. Hare on "Sacculated Aneurism and on Pulmonary Physical Signs," by Fetterolf and Norris on "The Topography of the Cardiac Valves as Revealed by X-Rays" and on "The Vesiculo-Tympanitic Note Normally Found at the Right Apex," and by Sailer on "The Physical Examination of the Liver."

Transactions of the American Association of Genito-Urinary Surgeons, vol. vii. pp. 315 (New York, Frederick H. Hitchcock, 1912). The

papers read at the 26th meeting of the Association and published in this volume were of exceptional interest, and their educational value is greatly enhanced by the full reports of the discussions which are appended. The volume includes the theses presented by three candidates for admission to the Association, and the excellence of these communications bespeaks the high standard set by the Association.

The twenty-fourth volume of the *Transactions of the American Pediatric Society* contains twenty-five contributions to its special subject. In glancing over these one cannot but be struck with the wide range of subjects under review. More papers, perhaps, are devoted to questions of metabolism and feeding than to any other single topic, and among other interesting articles we may note papers on Inclusion Bodies in Scarlet Fever Blood, and on Delayed Development Treated with Thymus. Most of the work has already been issued in the current journals, but it is well worthy of collection and preservation in this form.

Elementary Bacteriology and Protozoology, by Herbert Fox, M.D., Philadelphia (J. & A. Churchill, 1913, price 6s. 6d.), claims to give the nurse and the beginner an idea as to the nature of microbes and their relation to the world's economy, especially in disease, and it does so very clearly. It also gives much sound information on the channels of infection in bacterial and protozoal diseases and on disinfection and disinfectants. It is well illustrated, and there is a valuable glossary. As a theoretical introduction to the subject for those for whom it is intended the book is to be strongly recommended.

Hints for Regimental Medical Officers of the Territorial Force, by Captain M. F. Grant, R.A.M.C. (London: Forster, Groom & Co., Ltd., 1913, price 1s. 6d.), should prove a useful guide to territorial regimental medical officers. Duties at headquarters and at camp are detailed, and the method of accomplishment set forth with conciseness. A special feature is the insertion of references to official publications, so necessary in military correspondence. The book is of pocket size, and is interleaved so as to permit of notes and additions.

Dr. Chavasse's Advice to a Mother on the Management of her Children (Churchill, price 1s. 6d.) is now in its 340th thousand. The 17th authorised edition now before us has been revised by Dr. T. D. Lister. It is a standard work of its class, and can with safety be placed in the hands of anyone entrusted with the care of children. Mrs. Usher's *Book for Mothers and Nurses* (Churchill, price 1s.) is on similar lines, but is much less exhaustive. *The Prospective Mother*, by Professor J. Morris Slemons (Appleton & Co., price 6s.), contains much sound advice, and none more sound than the last clause of the first paragraph, "Put yourself at once under the care of a physician." If this advice is taken, much of what follows will be unnecessary.

EDINBURGH
MEDICAL JOURNAL.

EDITORIAL NOTES.

Annus Academicus 1913-1914.

A NEW annus academicus begins to-day. On the 7th of October the classes in the Faculty of Medicine open and continue till the 17th of December, when the Christmas vacation begins. On the 6th of January the classes re-open, and the winter session ends on the 18th of March. The summer session opens on the 15th of April and closes on the 26th of June. The academical year extends therefore to about thirty teaching weeks, and is divided into three terms, each of about ten weeks' duration. In our Educational Supplement particulars of the medical curriculum in the various Scottish universities and other teaching institutions will be found.

Edinburgh Post-Graduate Courses in Medicine.

THE post-graduate courses in Medicine have just ended and have been attended during the 1913 session by a larger number of graduates than ever before in the seven years of their history. One hundred and eleven individuals took part in the various classes, as compared with ninety-nine in 1912, and of these over twenty entered for more than one course, making in all one hundred and thirty-five entries. When these are analysed with regard to nationality it is found that about half the entrants practise in the British Isles, half are from the colonies and from the United States, while China, France, Italy, Russia, and Persia are represented by one each.

Not only is the number of pupils so much increased, but more teachers have taken part than in any previous year. It is an indication both of the interest which the Edinburgh School as a whole takes in the movement, and of the degree of individual attention which the graduate-pupil receives, that no less than seventy-nine teachers engaged in the instruction of the one hundred and eleven members of the courses.

The graduates who attend may be divided roughly into two groups. First, there are those who wish simply to attend for a limited period, to see what are the latest developments in medicine and surgery, but not to do any strenuous study: these are usually general practitioners enjoying their holiday. A second group is formed by those who come for some special course of study with a view to doing specialised work when they return home. In the early years of the Edinburgh post-graduate courses the first group alone was considered, but the tendency of the executive committee has been more and more in successive years to cater for the second group also. The course on

Operative Surgery, that upon Internal Medicine (methods of diagnosis) in August, the course on Diseases of the Ear, Nose, and Throat, and finally, in 1913, a course for surgeons on Special Genito-Urinary Surgery, have all been steps in this direction. As indicating the popularity of the course on Operative Surgery, we understand that all of the twenty-five places in the course were taken up two months before the course began, and that three entries have already been received for 1914.

We should like to see Medicine as strongly represented as Surgery, and doubtless this will be effected in the future. We understand, also, that the executive committee has in view the possibility of a combined course in Gynecology similar to those on the Ear, Nose, and Throat, and Genito-Urinary Surgery, which would certainly be very popular.

These post-graduate courses are without doubt a most important development of the Edinburgh School. The instruction of medical students is a comparatively simple matter, in which the smaller schools of recent growth are successfully competing with their older rivals. But for teaching graduates, elaborate equipment and a large staff of teachers are essential. There will be no better proof that Edinburgh is still a vital active force in medicine than the continued success of the post-graduate courses.

The Cultivation of Filter-passing Organisms.

THE announcement by Flexner and Noguchi of the successful cultivation of the organism of epidemic poliomyelitis marks another advance in our knowledge of the group of filter-passers, and, it may be hoped, a step towards the cure or prevention of disease. The organism has now been cultivated anærobically, both from human sources and from infected apes, in ascitic fluid containing a fragment of animal tissue. In culture it gives rise to a diffuse haziness in which individual colonies are barely distinguishable. The organism is a minute round body, occurring in pairs, groups, or chains: it measures from 0·15 to 0·3 μ., and can be stained by Gram's or Giemsa's method. Different strains vary in pathogenicity, but apes can in most cases be successfully inoculated with subcultures, and the organism can be identified in the nervous system as well as in human beings who have died from the disease.

The indefatigable Japanese collaborator of Flexner, who has already demonstrated the spirochæte pallida in the brain of general paralytics, and has to his credit the cultivation of the spirochæte of relapsing fever, has now succeeded by a similar method in cultivating the organism of rabies. The germ appears under more than one form —as corpuscles so minute as just to be within the limits of microscopic vision, and as nucleated corpuscles from 1 to 12 μ. in diameter. The relation of these forms to one another is not yet clear, but cultures containing them, which are sterile in the ordinary bacteriological sense, reproduce the disease when inoculated, and similar structures can then be detected in the nervous centres of the animals.

ON THE DURATION OF THE INTERVAL BETWEEN INSEMINATION AND PARTURITION IN CERTAIN MAMMALS AS STUDIED IN BIOMETRIC CURVES, WITH SPECIAL REFERENCE TO THE CALCULATION OF THE ONSET OF LABOUR IN HUMAN PREGNANCY.

By D. BERRY HART, M.D., F.R.C.P., Edinburgh.

"Il est prouvé par les faits que je viens d'exposer, que la gestation considérée dans les femelles de sept genres d'animaux domestiques, n'a point de terme fixe ; qu'elle est susceptible de varier."—TESSIER, *op. cit.*, p. 15.

"Denn wenn für die Bestimmung der Dauer eines Processes eine genaue Kenntniss seines Anfangs und Endes unerlässlich ist, so müssen wir unbedingt eingestehen : Ignoramus, ja sogar hinzufugen, et ignorabimus."—VON WINCKEL.

THE questions of the duration of pregnancy and of the calculation of the date of labour in the human female are elementary ones in obstetrics, but the views usually expressed are not only somewhat indefinite and inaccurate, but the data from which the onset of labour is calculated have not hitherto been considered critically, nor in the light of modern elementary biometric methods.

There exist, however, excellent data by Earl Spencer, Tessier, and Krahmer as to the interval between insemination and parturition in cattle ; and we have also similar statistics as to ewes and mares by Tessier.

In regard to the human female, there are groups of statistics by J. Y. Simpson, Montgomery, Reid, Ahlfeld, von Winckel, Issmer, Schlichting, where the date of labour is reckoned from the first day or last day of menstruation, or from a single congress or a supposed day of conception. These data are thus not all on the same plane owing to the different menstrual date chosen in fixing the starting-point of the calculation, and are also less suitable for our purpose, as usually percentages or averages of the results are given instead of the actual figures in detail.

Statistics in Ewes and Cattle.

Tessier gives the results of the date of labour following insemination in 912 ewes as follows:—

Brebis.

Nombre de Brebis.	Durée de la Gestation: Jours.
2	146
15	147
36	148
87	149
142	150
175	151
183	152
176	153
60	154
24	155
7	156
5	157

It is to be noted here that labour came on between the 146th and 157th day, and that *every* day had some lambs born.

The results of Tessier's ewe statistics may be plotted out in a curve, and this is shown in Fig. 2, and done as follows on a graph sheet:—The numbers of the animals born on a certain day are indicated by a dot above the appropriate day and opposite the number as it occurs in the vertical series of consecutive numbers to the left side. On the base line the days are arranged consecutively or according to the groups of days chosen, and in this way any dot has its value given in number of animals and day of their birth. When the dots, or rather the tops of the ordinates, are joined by a continuous line, we get some form of frequency curve or polygon, giving the probability dates for labour in the mammals chosen.

The frequency polygon, in various forms, expresses the statistical results of vital or non-vital processes when sufficient observations are made. Thus whether we take statistics of births and deaths, measurements of organs or of vital movements, coin tossings or hand variations in card games, we get this curve of frequency, enabling us to see the results clearly and scientifically; and there is the further great advantage that we are able to calculate and predict accurately the range of the probability of

FIG. 1.—Frequency polygon showing some of the results of the repeated withdrawals of 999 balls from an urn with a large number of black and white balls in equal numbers. Only the results of the most probable drawings are given: the less frequent probabilities are not given in the polygon (Quetelet: *v.* text).

the occurrence of future similar events. We may take here in preliminary explanation the ewe-labour curve and note that it is a symmetrical frequency curve somewhat skew (Fig. 2), showing that the greatest number of labours happens between the 149th and 153rd days, the numbers before and behind these dates being much less.

Before going on, however, to consider fully the results and curves of labour dates in ewe, cattle, and human labours, it will be of some advantage to consider the nature and methods of the interpretation of such curves, and this will be conveniently done by giving a short extract from one of Quetelet's letters on the *Theory of Probabilities*, published as long ago as 1849, and now out of print and difficult to obtain.

Much work has been done since then, especially by Galton and Karl Pearson, but Quetelet was a pioneer in its practical applications, and wrote in a singularly clear and attractive manner.

We may take (1) one of his illustrations, viz. the results of removing 999 balls at a time from an urn containing a large number of white and black balls in equal proportions, and (2) a short account of a coin-tossing experiment by Jevons.

1. Quetelet shows (Fig. 1) that the probability of taking 999 white balls without one black is extraordinarily small:—

"There would be but one chance for this drawing out of a total number of chances which it would take more than *three hundred figures* to indicate.

"The following event, which would consist of taking 998 white balls and one black, would also have an extraordinarily small probability: and it would be the same with all the drawings of a great number of white balls with a few black balls, or a great number of black balls with a few white. These drawings might be considered as nearly impossible.

"We only obtain a probability slightly appreciable by supposing that of 999 balls drawn, there are at least 420 white and not more than 579: the same with the black balls. In either case the probability of the drawing is only represented by the very small fraction ·00000004.

"The probability increases in proportion as the number of white balls in each drawing approaches to equality with the number of black balls; and the drawing which has the greatest probability is that of 500 white balls and 499 black, or *vice versâ*. This probability would be ·025225.

"If we wished to test theory by experiment we should be almost certain that every draw of 999 balls would bring out nearly as many white balls as black. All the drawings, in fact, in which the balls of one colour would exceed those of the other colour by 160 would not together have half a millionth of probability in their favour. It would be superfluous, in constructing a table of the possibility of drawing any group of 999 balls, to take any account of these latter drawings, the number of which mount up to 840: we may content ourselves with calculating the 160 groups which do not contain less than 420 and not more than 579 white balls. . . .

"The drawing of 499 white balls and 500 black is that which has the greatest number of chances in its favour. The drawing of 498 white balls and 501 black has a less probability.

"In proportion as the difference between the number of black and white balls in each drawing of 999 balls increases, the probability of the drawing diminishes. This decrease is shown in the figure by the heights of the small successive rectangles constructed on $a'b'$, $b'c'$, $c'd'$, etc. (Fig. 1). Thus the probability of drawing 480 white balls out of 999 is represented by the small rectangle constructed on $o'p'$ (Fig. 1). The table of possibility * gives the number of ·011794; and the figure shows that this probability is in fact little less than half the *maximum* probability which consists of taking 499 white balls in one drawing—a probability which is represented in the figure by the greatest rectangle, that constructed on ab' (Fig. 1).

"The small rectangles afterwards decrease so rapidly that that which represents the probability of taking 450 white balls in a drawing of 999 has scarcely any height: and yet, to follow the law of continuity, we should construct 450 more, each successively diminishing in height. I have not represented them in the figure, for not even a magnifying-glass would have sufficed to make them appreciable. . . .

"Each of the small rectangles, in juxtaposition in the figure, indicates by its size the probability of the most probable drawings of 999 balls.

"The figure is symmetrical on the two sides of the axis aa'; and this ought to be the case, for what takes place for the white balls should also take place for the black. Thus the two rectangles constructed on po and $p'o'$, on the two sides of and at equal distances from the axis aa', are equal, because the probability of

* Quetelet gives this table in an appendix.

taking 519 white balls and 480 black is equal to that of taking 480 white and 519 black. . . .

"*What we might bet on each drawing individually is proportional to the height of the small rectangle which corresponds to that drawing.* If the heights of these small rectangles represented piles of crowns, in collecting all those deposited between u and u, I doubt not but that great embarrassment would be felt in joining to them those extremely small numbers placed without their limits: all the crowns composing them would scarcely form a thousandth part of those included within the limits stated" (Downes' transl., pp. 66 *et seq.*).

2. *A Coin-tossing Experiment by Jevons.*—Coin-tossing experiments or trials illustrate probability very well and simply. Jevons tossed ten shillings as a whole, registering the heads, and did this for 2048 throws in two sets of 1024 throws each. The following table (*op. cit.*, p. 208) gives his actual results and the theoretical ones:—

Heads.	Tails.	Theoretical Numbers.	First Series.	Second Series.	Average.	Deviations.
10	0	1	3	1	2	−1
9	1	10	12	23	17½	−7½
8	2	45	57	73	65	+20
7	3	120	129	123	126	+6
6	4	210	181	190	185½	−25½
5	5	252	257	232	244½	−7½
4	6	210	201	197	199	−11
3	7	120	111	119	115	−5
2	8	45	52	50	51	+6
1	9	10	21	15	18½	+8½
0	10	1	0	1	...	...
Totals		1024	1024	1024	1024	−1

On this, Jevons remarks: "The whole number of single throws of coins amounted to 10×2048, or 20,480 in all, one-half of which, or 10,240, should theoretically give heads. The total number of heads obtained was actually 10,353, of 5222 in the first series and 5131 in the second. The coincidence with theory is pretty close, but considering the large number of throws, there is some reason to suspect a tendency in favour of heads."*

* It is worth notice that in human births there is always a slight and hitherto unexplained preponderance of male infants.

If the theoretical numbers were plotted out, a frequency polygon would be obtained, and the actual throws would have closely approximated to it.

Galton in his pioneer work in this country on hereditary genius gives good illustrations on these points, showing that in height-measurements of men the results plotted out give a symmetrical frequency polygon, or, as he puts it:—"The line of average height is that which divides the dots into two equal parts and stands in the case we have assumed at the height of 66 inches. The dots will be found to be ranged so symmetrically on either side of the line of average that the lower half of the diagram will be almost a precise reflexion of the upper one" (*op. cit.*, p. 24). The same holds good as to shots at a target, as will be alluded to later.

I now wish to take up in detail (1) Tessier's statistics as to ewes; (2) Spencer's as to cattle; (3) Tessier's as to cattle; (4) von Winckel's and Reid's as to the human female.

Tessier's Curve as to Ewes.

The curve given by the ewe-labour dates is an almost symmetrical one, a little skew on the right side. Of the 912 births, 676, practically three-fourths, were born on the 150th to 154th day after insemination.

As the ewe curve is the simplest of all, it may be as well that an attempt be made to explain it, as this will facilitate understanding the others. One must at present leave out of consideration any question of the duration of the pregnancy. There may or indeed must be a probability duration, but as we do not know when pregnancy begins it would only lead one astray to import it into the discussion at present.

The points to be noted in this curve are: (1) the occurrence of the labours was on consecutive days; (2) the small spread of the curve, only 11 days (146–157); (3) its comparative and almost symmetrical nature (Fig. 2).

It may be considered as probable that in the ewe only one ovum is shed at or near the time of insemination, and that the difference in the number of days between insemination and labour is due to the greater or less number of days which the male element took to meet the ovum.

Thus we may suppose that the ovum was met almost at once by the spermatozoon in the case of the two lambing on the 146th

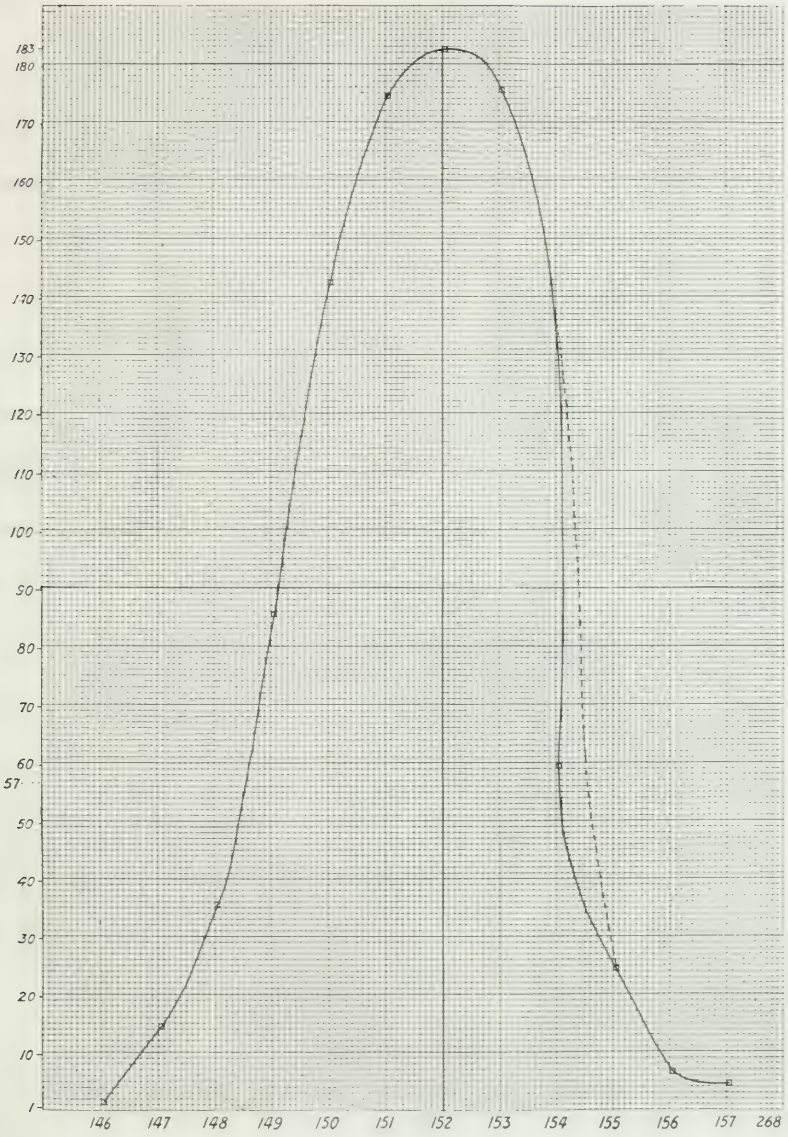

FIG. 2.—Curve of results in Tessier's statistics of 912 births in ewes. The vertical column gives the numbers, the base line the days of birth after insemination. The results are plotted-out from 24-hour groupings.

day; and thus that in the others, if we subtract 146 from their date, we get the delay of meeting in each case.

It may be urged that this means that the largest number of gametic (spermatozoon and ovum) unions takes place, not at first, but later. There is, however, no proof either way, except that the later delay explains the curve better; and thus the present assumption is at least as justifiable as the other.

The meeting of the ovum and spermatozoon may be regarded as similar to the shots at a target, as these in sufficient number give, when the distances from the bull's eye are reckoned, a frequency polygon. In the insemination question it is of course the delay period in meeting the ovum and the duration of the pregnancy so initiated that are taken into consideration.

The insemination-labour period is really made up of three elements—the interval between the meeting of the spermatozoon and ovum, the actual probable duration of pregnancy, and the probable duration of the labour. The date of labour is not the date of the onset of labour but of its end, and when labour is prolonged, as it often is in cattle and the human female, an extra day or more is thus added to the insemination-labour duration. As in human labour the duration of labour varies from 15-22 hours (Veit), we may leave it out and reckon it with the pregnancy duration in each case. This makes no practical difference.

We may therefore practically consider the insemination-labour date as made up of the delay period and the duration of pregnancy and labour, *i.e.*, we take in the labour with the pregnancy as to time, considering the animal legally pregnant until labour ends.

To those who object to this addition, it may be said that a day may be deducted for the labour duration.

Tables by Spencer and Tessier.

Spencer (fifth Earl, 1782-1845, better known as Lord Althorp*), in his paper in the *Veterinarian* for 1839, gives a table of the number of days intervening between insemination and labour in 764 cattle. Spencer's remarks on his data are excellent, and indeed the table is probably the best and most thorough on such statistics that we possess.

* For the high esteem in which Lord Althorp was held as a trustworthy observer and statesman, see *Nat. Dict. of Biography* and Trevelyan's *Life of Lord Macaulay*.

No. of Days of Gestation.	Cows.	Cow Calves.	Bull Calves.	Twin Cow Calves.	Twin Bull Calves.	Twin Cow and Bull Calves.
220	1	...	1	...	...	...
226	1	1	...	...	...	...
233	1	...	1	...	...	...
234	1	...	1	...	...	...
235	1	1	...	...	...	...
239	1	1	...	...	...	...
242	1	...	1	...	...	...
245	2	2	...	...	...	...
246	2	...	2	...	...	...
248	1	1	...	...	...	...
250	1	1	...	...	...	...
252	2	...	2	...	...	...
253	1	...	1	...	...	...
254	1	1	...	...	...	...
255	2	...	2	...	...	...
257	2	1	1	...	...	...
258	3	1	2	...	...	...
259	1	...	1	...	...	...
262	1	...	1	...	...	...
263	2	...	2	...	...	...
266	1	...	...	...	1	...
268	2	2	...	...	...	...
269	2	...	1	...	...	1
270	5	2	1	1	...	1
271	6	5	1	...	...	...
272	3	1	1	...	1	...
273	3	2	1	...	...	...
274	5	...	5	...	...	...
275	5	2	2	...	1	...
276	15	7	6	...	1	1
277	14	10	2	1	...	1
278	18	11	4	1	...	2
279	32	16	11	3	...	2
280	35	15	20	...	...	...
281	39	20	18	...	...	1
282	47	26	20	1	...	...
283	54	30	24	...	...	...
284	66	33	33	...	...	...
285	74	29	43	...	...	2
286	60	22	38	...	...	...
287	52	25	27	...	...	...
288	42	13	28	...	1	...
289	45	20	25	...	...	...
290	23	10	13	...	...	...
291	31	9	22	...	...	...
292	16	5	11	...	...	...
293	10	1	9	...	...	...
294	8	1	7	...	...	...
295	7	3	4	...	...	...
296	6	2	4	...	...	...
297	2	1	1	...	...	...
299	1	...	1	...	...	...
304	1	1	...	...	...	...
305	1	1	...	...	...	...
306	3	3	...	...	...	...
307	1	1	...	...	...	...
313	1	1	...	...	...	...
	764	340	395	7	5	11

We see in it clearly the variation in the days intervening between insemination and labour. The smallest number of days is 220, the greatest 313. If we subtract those Spencer was unable to rear, viz. six before the 242nd day, or even if we accept his *dictum* that any one born before the 260th day may be considered as premature (*op. cit.*, p. 724), the period is still from 260 days to 313—fifty-three. The greatest number was born between the 276th day and the 293rd—673, while between the 294th and 313th days 31 births took place. A glance at the second column of the table suggests a probability polygon.

The table is further of interest as to the sex of the offspring. In 764 cattle the sexes are in the proportions of 354 cow calves (340+14) to 427 bull calves (395+10+22),* thus showing an overpreponderance of male births—73—as in man. "In those whose gestation did not exceed 286 days, the number of cow calves produced was 233, and the number of bull calves 234, while from those whose period exceeded 286 days, the number of cow calves was only 90, while the number of bull calves was 152" (*op. cit.*, p. 724).

He also states that he was not able "to rear any calf produced at an earlier period than 242 days" (*op. cit.*, p. 724), but does not say that those born after an apparently prolonged gestation were above the usual size. All he says is, "any period of gestation exceeding 300 days must also be considered irregular, but in this latter case the health of the produce is not affected" (*op. cit.*, p. 724).

He does not state definitely what he took as the initial date of his reckoning in his statistics as to the onset of labour, but it can only have been insemination.

On looking at Spencer's table it will be noted that the days on which labour came on are not consecutive, as in Tessier's ewe-labour statistics. Spencer's results are grouped in 24-hour observations, and therefore the margin between one day and the next might be narrow, as one can imagine that a certain number of labours might be close on the midnight of the day, and another number immediately after it on the following day. Thus it seemed advantageous to group the labours in 48 hours and plot the curve from them. This was the more justifiable, as when grouped in 24 hours' series Spencer's curve was peaked and irregular, but smoothed out in the 48-hour groups. The extreme figures which would have been at each end of the curve were omitted, as in Quetelet's drawings of balls (Fig. 1). Spencer's curve in 48-hour

* The free martin is a sterile bull.

groups is then (from 269th to 295th day) a somewhat pointed symmetrical curve (Fig. 3), the greater number of the labours occurring between the 279th to 291st days.

The following gives the results, in 48-hour groupings, on which the curve is based.

The following figures give those in the curve (Fig. 3) :—

Calves	. .	4	11	6	10	29
Days	. .	268-69	270-71	272-73	274-75	276-77
Calves	. .	50	74	101	140	
Days	. .	278-79	280-81	282-83	284-85	
Calves	. .	112	87	54	26	15
Days	. .	286-87	288-89	290-91	292-93	294-95
Calves	. .	8	1			
Days	. .	296-97	298-99			

Tessier's statistics are based on the same interval in 446 cows, and are as follows :—

Nombre de Vaches.	Durée de la Gestation : Jours.	Nombre de Vaches.	Durée de la Gestation : Jours.
1	240 Termes les plus faibles.	38	281
		29	282
1	244	22	283
1	247	32	284
1	253	22	285
1	257	35	286
3	258	24	287
1	259	23	288
1	260	19	289
2	261	19	290
1	262	14	291
1	263	12	292
3	266	9	293
1	267	9	294
2	268	8	295
1	269	3	296
12	270 Termes les plus ordinaires.	3	297
		6	298
7	271	4	299
18	272	1	300 Termes les plus fortes.
10	273		
18	274	2	301
12	275	1	302
20	276	1	304
33	277	2	306
27	278	1	307
29	279	1	309
27	280	1	321

In the circulars Tessier sent out he asked the agriculturists to give "les jours de saillies et de mises bas des femelles" (*op. cit.*, p. 4).

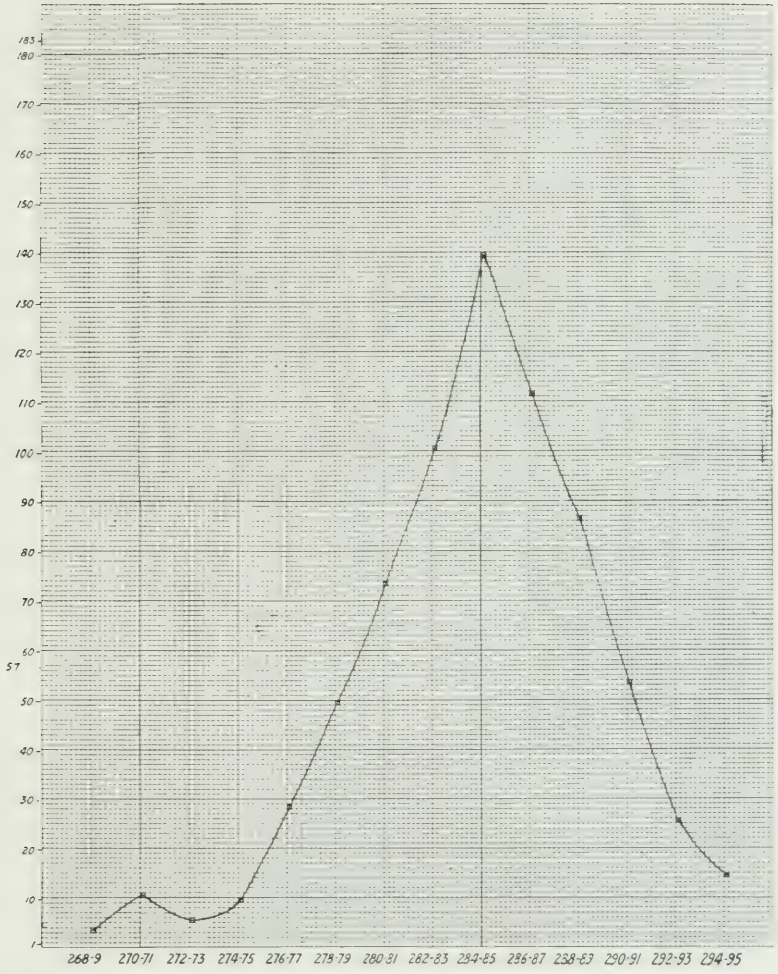

FIG. 3.—Frequency polygon based on Earl Spencer's birth statistics of 764 cattle: in 48-hour stoppages.

Tessier's cattle results are fewer in number, and when plotted out in intervals of 48 hours, as in Spencer's, are as follows :—

Calves	. .	13	25	28	32	60
Days	. .	269-70	271-72	273-74	275-76	277-78
Calves	. .	56	67	54	57	
Days	. .	279-80	281-82	283-84	285-86	
Calves	. .	47	38	26	18	
Days	. .	287-88	289-90	291-92	293-94	
Calves	. .	11	9			
Days	. .	295-96	297-98			

The curve is less regular, but similar to Spencer's.

Krahmer (quoted by Ahlfeld) gives statistics in eight cattle, and these are as follows :—

No. 1 on 282, 277, 279, 281, 286, 281, 277.
No. 2 on 282, 283, 283, 280, 276, 277, 281.
No. 3 on 283, 281, 284, 281, 283, 280, 250, 277.
No. 4 on 284, 280, 289, 284, 292, 290.
No. 5 on 301, 304, 299, 303.
No. 6 on 276, 286, 291, 295.
No. 7 on 275, 294, 283, 303, 284, 275.
No. 8 on 303, 284, 280, 321, 278, 288, 275.
(Given by Ahlfeld, *Mon. für Geb.*, 1869, p. 295.)

It is to be noted that the number of days varies in the same animal, and that No. 5 had always apparently long gestations.

We have now to take up the physiological aspect of insemination and its relations to the labour dates.

We must first note that at insemination an immense number of spermatozoa are shed, probably very many millions. In a human ejaculation it is calculated that 220,000,000 are shed, and these having an independent power of movement, and for other reasons we need not go into, pass up the tract to meet the ovum. It is usually stated that they pass at once into the cornua or uterus, at least the great majority.

In rats the ejaculation is made coherent by a special secretion from glands in connection with the seminal vesicles. In rabbits the spermatozoa are found in the tube and ovary shortly after congress.*

* The question of the length of time spermatozoa may live in the female cornual or Fallopian tract is not one easily discussed. Those of the bat are said to survive in the uterus when winter impregnation takes place until spring, when fertilisation occurs. In the human female they have been found

In the ewe statistics the spread goes over 12 days, and I suppose that only one ovum was shed, owing to the shortness of this period, *i.e.*, no second ovum can be supposed to be shed in the short time so far as these ewes are concerned.

The cow, however, may come into heat sometimes, about three weeks or so after insemination, and I advance the following explanation for cattle :—I suppose that in cattle two ova may be shed at intervals of three weeks, the second being fertilised by a spermatozoon of the one insemination which failed to fertilise the first ovum, and that this delay makes the later date of labour but does not necessarily mean a longer duration of pregnancy.

Thus in ewes and cattle *the date of labour cannot be fixed accurately, as it is a carying period, and is to be considered and fixed approximately by collecting statistics and regarding them biometrically, as one does shots at a target, coin tossings, measurements of heights, lengths of organs.*

The study of these will show how any individual calculation of a labour date must be based on this consideration, and the date placed as most probable either in ewes between the 148th and 153rd day, or in cattle between the 279th and 291st day. It must be kept in mind that much less probably the date may fall in front of or behind the most probable ones.

Human Pregnancy.

In *human pregnancy* the question to be discussed is more difficult. The initial point for calculation is not so sharply fixed, and it is evident we cannot, as in lower mammals, except in a small number of cases, reckon from a single congress.

In practice one takes as the starting-point for the calculation of the probable date of labour (*a*) the day of the cessation of the last normal menstruation; (*b*) the day of the beginning of the last normal menstruation; (*c*) the alleged day of conception; (*d*) a single congress sufficiently isolated.

The dates usually employed are those of the cessation or beginning of the last normal period.

(a) *The Day of the Cessation of the Last Normal Menstruation.*—This is the usual initial date chosen, but is not the best one.

moving and apparently alive three weeks after congress. Teacher and Bryce state that fertilisation takes place usually in the first twenty-four hours after congress (*op. cit.*, p. 49), but this is too extreme a statement, and indeed we are as yet unable to give any figures on such a point.

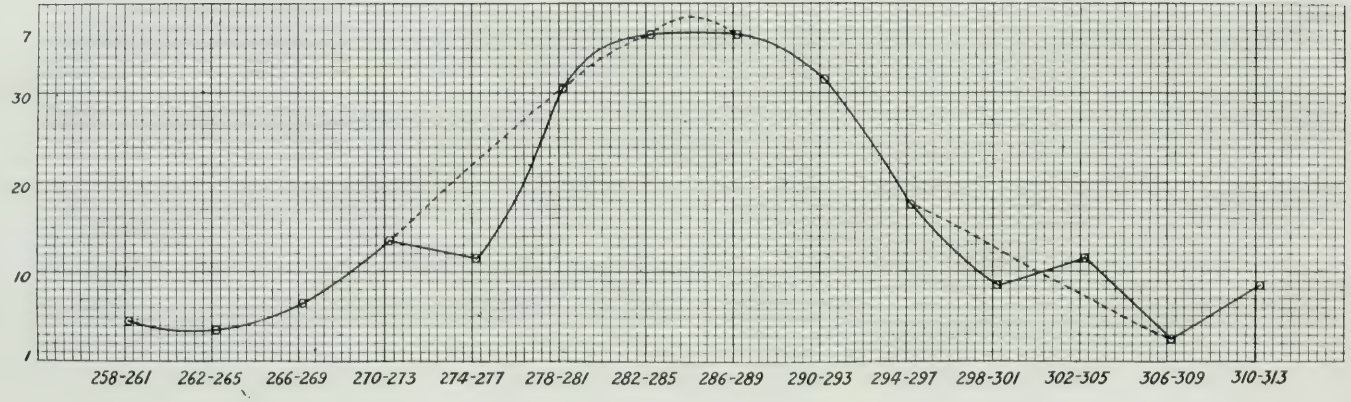

FIG. 4.—Frequency polygon of v. Winckel's statistics of birth in 450 cases of human female labour calculated from first day of last menstruation : in 96-hour groupings.

Women may take different views as to when the menstrual flow stops, and thus a varying element of some days may be introduced. The reason this method of fixing the initial date is adopted is probably from an idea that one is calculating or getting at the duration of pregnancy, and from the supposition that conception is more likely immediately after a period; and thus one should avoid reckoning in the menstrual days, when of course the woman could not be pregnant.

The question of the duration of pregnancy should not, however, enter at all into the calculation, as has been already stated.

(b) *The Day of the Beginning of the Last Normal Menstruation.*—This is used in their tables by William Harvey, Ahlfeld (partly), von Winckel, and has the advantage of being more definite, as a woman can probably fix the date when her menstruation began more accurately than that of its cessation. It has also the further advantage of excluding the varying duration of the menstrual period in women and of making the calculation somewhat more exact. It is, however, less usually taken on the wrong but common-sense idea that one would thus be reckoning the menstrual period as part of the pregnancy.

(c) *The Alleged Date of Conception has no Value.*—There is no physiological reason for believing that the actual meeting of the gametes is accompanied by a special orgasm.

(d) *The Single Congress Date* has no special accuracy, and one is not any nearer the question of when conception takes place.

The Curves obtained from von Winckel's and Reid's Statistics.—Von Winckel's statistics comprised 450 cases in which the children weighed over 4000 grammes, 9 lbs. The curve at Fig. 4 shows the result when the numbers are grouped in 96-hour intervals. In 24-hour groups the curve is repeatedly peaked but has a frequency general contour. The peaking is due probably to the frequency of births arranged round midnight. Fifty per cent. of human labours take place between eight in the evening and eight in the ensuing morning. Twenty-four hourly grouping of statistics thus separates labours happening closely together, while the 96-hour grouping gives a more perfect frequency curve. The curve is a frequency one, but somewhat skew on each side. By taking the mean at the irregular points it smooths out (Fig. 4).

In Reid's statistics, from the last day of the last menstruation the cases are 500 in number, and are as follows:—

	Days.	Cases.		Days.	Cases.		Days	Cases.
37th week	252	4	40th week	274	21	43rd week	295	2
	253	1		275	20		296	5
	254	3		276	16		297	8
	255	1		277	16		298	6
	256	2		278	22		299	1
	257	4		279	21		300	2
	258	4		280	15		301	4
	259	4						
38th week	260	6	41st week	281	18	44th week	302	1
	261	5		282	25		303	1
	262	3		283	14		304	1
	263	9		284	15		305	2
	264	10		285	14		306	0
	265	5		286	15		307	1
	266	10		287	11		308	2
39th week	267	9	42nd week	288	17	45th week	309	0
	268	13		289	8		310	1
	269	5		290	9		311	1
	270	13		291	14		314	1
	271	12		292	6		315	2
	272	13		293	3		316	1
	273	16		294	6			

Total . . 500 Cases.

Reid's cases, with the exception of 50, were from private practice, the others being selected from 1000 hospital and dispensary patients whose dates were trustworthy. When all his cases are grouped in intervals of 96 hours, the curve at Fig. 5 is the result. The spread is from 252 days to 316, and the largest number of cases is between the 272nd and 291st day, *i.e.*, 9 days behind and 11 days in front of the 280th day. This agrees with the ordinary practical way of calculating the date of labour in women (Fig. 5).

We may now discuss:—

1. The curves from a clinical point of view.
2. The alleged duration of pregnancy.
3. The question of calculating the date of labour in the human female.
4. The alleged prolongation of the duration of pregnancy and alleged larger size of the child in such cases.
5. The insufficiency and indefiniteness of the data as to cessation and onset of menstruation in human pregnancy: how fresh data may be obtained.
6. General conclusions.

1. *The Curves from a Clinical Point of View.*—I do not purpose at present considering the curves from a purely biometric point of view, but take them up mainly in their clinical aspect.

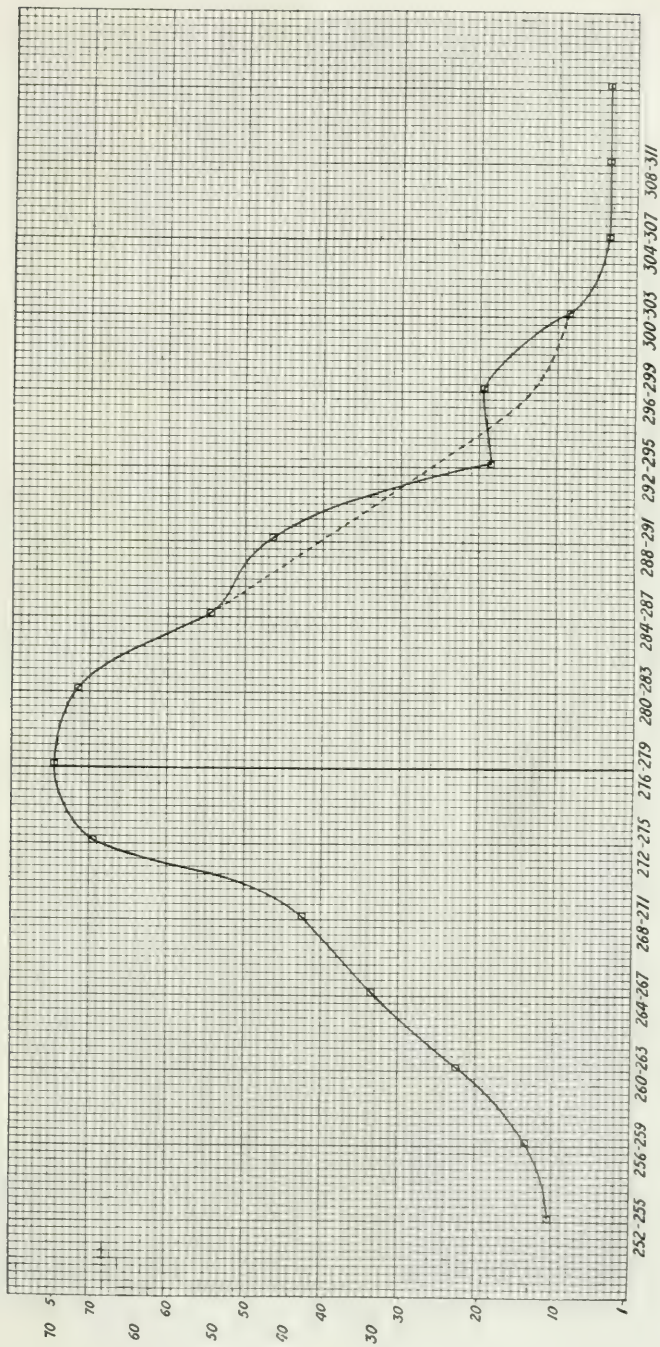

Fig. 2.—Frequency curve based on Reid's statistics of 500 human female births in 96-hour groupings, and calculated from last day of last menstruation.

The curve of Tessier's 912 ewe-lambings is a frequency one and somewhat skew on the right side. The groupings are in 24 hours. It shows the most likely date of labour as lying between the 149th and 153rd day (Fig. 2).

In Spencer's cases the curve is a symmetrical one in 48-hour groupings but peaked and irregular, although with a probability tendency in 24-hour groupings.

The advantage of the 48-hour grouping seems to be that it reduces the apparent accumulation at the hours of 12 P.M. and 1 A.M. of each day. At any rate this grouping changes the irregular peaked curve of a 24-hour grouping into a skew frequency one.

The greatest number of deliveries takes place between the 279th and 291st day.

Tessier's cattle curve in 48-hour groups is similar to Spencer's, and, if the two irregularities in it have a mean substituted, gives a frequency polygon also.

Reid's 500 cases in 96-hour groupings give a skew frequency curve, but if the disturbing points are divided by a mean figure the curve is more typical. The greatest number of births lies between the 272nd and 291st day (Fig. 5).

The same remarks apply to von Winckel's cases (Fig. 4).

Thus the date of labour in women is a probability, not an exact one, in each case: there is no exact date of labour for women.

2. *The Alleged Duration of Pregnancy.*—Although the duration of pregnancy is discussed and disputed, it must be understood distinctly that it is not known, nor have we any data for settling it as yet. The initial term, viz. the actual time of conception, cannot be ascertained in mammals, and even in Abderhalden's method by means of the interaction of the blood serum of the pregnant patient and alien blood from a placenta, the test is usually made some weeks after conception, and is not as yet technically perfect. It is possible, however, that this delay may be shortened.

What the practitioner calculates is the approximate date of labour, so many days after a certain day, first or last, of the last menstrual period. The duration of pregnancy may be less than this or greater. The former is occasionally noted in women who do not menstruate after marriage, conception occurring speedily. In such I have always calculated from the period before marriage, giving the probable date of confinement without any explanation

of the data to the patient, who might misunderstand it, and have found it come out as in the usual calculation with women.

3. *The Question of Calculating the Date of Labour in the Human Female.*—From what has already preceded, it seems best to take the first day of the last period, to calculate forward 280 days, and look to the confinement, in most cases, happening some few days in front of or behind this date. The exact day may be hit upon, but not as a rule. The most probable day lies within certain limits of the curve, as already explained, but not for all on any one day—or even within this limit—but may in certain cases fall considerably short of, or beyond it.

4. *The Alleged Undue Prolongation of the Duration of Pregnancy and Alleged Larger Size of the Child in such Cases.*—The date of labour may fall behind the 280 days, as follows from what has been already said. Cases of alleged undue prolongation of the menstrual-labour * period occur, and the question is still disputed: Does this mean an undue prolongation of the duration of pregnancy or an increase in the menstrual-labour period due to the fertilisation of a second ovum shed at the first period missed?

I incline to the latter explanation, but cannot be dogmatic as to its accuracy. Undue prolongation is discussed by Reid, and also specially by Lyall in his pamphlet on the Gardner peerage case. In this case the child was born, if legitimate, after a pregnancy of 304 to 311 days or of 153 days according to the times of cohabitation of husband and wife. On the other hand, if the child were the result of adultery on the mother's part, no question of alleged prolongation arose. The whole question of this case need not be gone into, but the Court decided that Lord Gardner's son by a subsequent marriage was the legitimate heir, and therefore against the first child, whose legitimacy demanded a prolongation, of the supposed duration of pregnancy, to 304-311 days.

I am not certain that this was quite a just judgment, although a judicious one under the circumstances. The cattle and ewe curves, as well as Reid's and von Winckel's, show a spread as far as 313 days (cattle) and 322 (human female), and if any prolonged menstrual-labour date lies inside the ultimate possible date given in the curves, the case should have the benefit of this statistical fact. The reasoning of the committee of peers seems to have been analogous to Hume's famous argument on Miracles—it is unlikely that pregnancy could be prolonged as late as the 311th day; it is

* Meaning by this the interval between the first period missed and the end of labour.

unlikely that the female defendant would be unchaste in her married life: but as the first alternative is more unlikely than the second, the second and more likely probability was upheld.

In the Gardner peerage case seventeen obstetricians and eight married women or midwives gave evidence, and it is interesting to note that the obstetricians, who are now ranked high as noteworthy men, Blundell, A. B. Granville, Merriman, especially the first two, all held to the possibility of the prolongation of pregnancy, and were severely cross-examined by that great disturber of justice, the alert and disputatious counsel. They failed to convince the Committee, although their evidence was scientific, especially that of Blundell, who quoted Tessier's work. Granville, whose *Atlas of Abortion*, 1834, is still the best we have, was also severely heckled. Sir Charles Clarke, who has left no permanent reputation, and Gooch, held to the 280 days' duration, with a possible variation of a few days.

Clarke's statement is: *I have never yet seen a single instance in which the laws of Nature have been changed*, believing the law of Nature to be that parturition should take place *forty* weeks after conception. Gooch, whose *Diseases of Women* was reprinted by the Sydenham Society, said, "I believe it to be" rather less than nine calendar months. The matrons, who gave their evidence much like Mrs. Cluppins to Justice Stareleigh in *Pickwick*,* were unanimous in favour of prolongation.

In cases of supposed longer duration of pregnancy the child is alleged to be heavier, but von Winckel's, Stumpf's, and Jacoby's views are to a certain extent against this.

It is to be noted that the size of the child cannot be dependent on the prolongation of pregnancy alone, but also on the mother's diet, exercise, and build. Noël Paton and Prochownick have shown how spare diet lowers the weight of guinea-pigs and pregnant women, and we have to keep in mind the function of the fœtal pituitary gland. The whole question needs reconsideration (see Stumpf, von Winckel's *Handbuch*, iii. 3, p. 35, and Ahlfeld's paper on "Riesenkinder," *Zts. f. Geb. u. Gyn.*, 1912, 602).

Further, Spencer and Tessier do not favour the view of the alleged greater size of calves in late labour dates.

5. *The Insufficiency and Indefiniteness of the Data as to Cessation of Menstruation, Conception, etc., in Human Pregnancy: how*

* For instance, Mary Summers explained her date of quickening from the fact that it occurred on the day she had gone to the Windmill Public-house "to cook the beef," and was cross-questioned as to this culinary performance by Mr. Tindal.

Fresh Data may be Obtained.—The data in human pregnancy for the calculation of the date of labour are not equal in value to that of ewes and cattle, as the initial dates given may be the first day of the last menstruation, last day of last menstruation, date of insemination, that is, of a single intercourse, and the supposed date of conception based on a high orgasm.

The first two are reliable as to the probable date of labour, for most cases lie usually between the 275th and 283rd to 287th day. The average difference between the first and last day of menstruation is four to six days, and thus the fortnight or so of occurrence of labour is given sufficiently accurately by either as an initial date.

Additional and more exact results might be obtained officially under the new Insurance Act in force in this country, if in the cards handed in for the confinement benefit, the dates of first day of last menstruation, last day of last menstruation, and day of labour were entered by the attendant on the labour.

Résumé.

1. The duration of pregnancy in any mammal is not known, as the date of conception, by our present means of investigation, cannot be ascertained.

2. We must, therefore, say with von Winckel, "ignoramus," but not necessarily "ignorabimus."

3. In calculating the date of labour we must put out of the calculation any thought of the duration of pregnancy.

4. The initial date for the calculation of the date of labour in the human female should be the first or last day of the last menstruation. Additional data are still required to fix which is the more reliable initial date.

5. Midterm quickening may be used for corroboration in doubtful cases, but is not as a rule reliable by itself, owing to the mistakes that may be made by the patient.

6. Tessier correctly suggested in 1819 that the period of gestation and therefore, logically, of the date of labour varied, and that an exact date of labour could not be predicted.

7. Dates of labour in sufficient numbers plotted out in curves give approximate frequency polygons, usually skew.

8. Tessier's ewe-labour curve is the best, and is given in 24-hour groups. The greatest number of cases of labour in Tessier's ewe cases occurred between the 149th and 153rd days. Agriculturists usually reckon utero-gestation in sheep as a five months' one.

9. In cattle Spencer's statistics in 2-day groups also give a skew frequency curve. The greatest number of labour occurred between the 281st and 289th day (530 out of 764 cases).

10. Tessier's cattle cases give an analogous curve.

11. The date of labour in mammals is therefore a varying and not an exact one, and the greatest number falls within certain definite days.

12. A long insemination- or menstrual-labour period does not necessarily mean a prolongation of the duration of pregnancy.

13. The alleged greater size of the fœtus in long insemination-labour periods is not yet accurately proven, and is not supported by Spencer's and Tessier's results.

14. The view here given of the cause of the insemination-labour or menstrual-labour dates is based merely on the question of the probable date of the meeting of the gametes on each side. In regard to the date of labour and of a certain probable duration of pregnancy we are still in the dark, and thus the explanation just given must be considered as an elementary one, certain to be expanded in the future. The date of labour can, however, be given as likely to occur within a certain number of days reckoned from a definite first point.

I have to thank Dr. Cargill Knott and Dr. G. A. Carse for discussing the curves with me and for valuable suggestions.

LITERATURE.—Elderton, W. Palin, *Frequency Curves and Correlation*, C. & E. Layton, 1906; see for literature by Pearson and others. Frank u. Heimann, "Die biologische Schwangerschaftsdiagnose nach Abderhalden und ihre klinische Bedeutung," *Berlin. klin. Woch.*, 1912, p. 1706. Galton, Sir F., *Hereditary Genius: An Inquiry into Its Laws and Consequences*, London, 1869. Herschell, Sir J., Article on Downes' transl. of Quetelet in *Edinburgh Review*, July 1850, No. 185. Jevons, W. S., *The Principles of Science*, p. 208, Macmillan & Co., 1877. Lyall, *The Medical Evidence Relative to the Duration of Pregnancy as Given in the Gardner Peerage Case before the Committee for Privileges of the House of Lords, in* 1825-26: with introductory remarks by Robert Lyall, M.D., F.L.S., London, 1826. Merriman, *A Text-Book on the Method of Least Squares*, New York, 1901. Quetelet, *Lettres à S. A. R. le duc règnant de Saxe-Coburg et Gotha sur la Théorie des Probabilités appliquée aux Sciences Morales et Politiques*, 1846 (also transl. by Downes). Reid, Dr. James, "On the Duration of Pregnancy in the Human Female," *Lancet*, 1850, i. and ii. Spencer, Rt. Hon. Earl, "On the Gestation of Cows," *Veterinarian*, 1839, p. 722. Tessier, M., "Sur la durée de la gestation et de l'incubation dans les femelles de plusiers quadrupèdes et oiseaux domestiques," *Mem. Roy. de l'Institut de France*, 1819. Winckel, F. v., "Neue Untersuchungen uber die Dauer der menschlichen Schwangerschaft," *Volkmann's Sammlung, Gynäk*, No. 107; see also his *Handbuch*, i., 1, p. 48.

POST-GRADUATE INSTRUCTION OF TUBERCULOSIS MEDICAL OFFICERS.*

By Sir R. W. PHILIP, M.D., Edinburgh.

In view of the increasing direction of anti-tuberculosis effort on the part of the State, which implies the establishment of what is tantamount to a special tuberculosis service, and in view of the rapid advances of knowledge regarding tuberculosis—pathological, clinical, statistical, and sociological—it is of the first importance that practitioners in medicine, engaged in tuberculosis work, should be afforded opportunities of keeping themselves abreast of medical progress in the special department.

The British Departmental Committee on Tuberculosis in its Final Report, presented to Parliament in March 1913, recommended "that additional facilities should be afforded to medical students and practitioners to acquire familiarity with the methods of diagnosis of tuberculosis, more especially in its earlier manifestations, and with the methods of treatment."

In particular they made the following recommendations:—

1. Medical students and practitioners should be afforded facilities to attend the practice at tuberculosis dispensaries, sanatoria, and other institutions.
2. It is advisable that tuberculosis dispensaries should, where possible, be directly associated with schools of medicine.
3. Every tuberculosis officer appointed after January 1913 should be required to give satisfactory evidence that he has, subsequent to qualification, devoted at least six months to special training in tuberculosis, and at least eighteen months to general clinical work, of which six months should have been spent as resident in a hospital for general diseases or other hospital not confined to the treatment of tuberculosis.
4. Tuberculosis officers should be afforded special facilities by the authorities by whom they are appointed enabling them to spend not less than one month every three years in attending post-graduate instruction.

As one of the signatories to the Report I associate myself with everything implied in the recommendations. There is no doubt that the student of medicine at the present time has for the most part less opportunity of acquainting himself with the varied

* Delivered before the International Congress on Post-Graduate Medical Instruction, August 1913.

manifestations of tuberculosis and the developments of treatment than is desirable. If this be true of the present student, it is still more true of the graduate of some years ago. Looking to the rapidly shifting outlook on tuberculosis at the present time, there can be no doubt as to the desirability of men appointed to special tuberculosis posts having provided for them post-graduate opportunities which they may use from time to time.

Post-graduate courses in tuberculosis have already been established successfully in several centres, and have attracted a considerable number of workers. In Edinburgh, for example, where such advanced teaching has been carried out for a good many years, there has been recently a rapid increase in the demand. During the past year a large number of practitioners from different parts of the United Kingdom have been in attendance.

If these post-graduate courses are to be effective they must be carefully developed along scientific and practical lines. The courses should include a consideration of the different aspects of tuberculosis, viz. (*a*) pathological, (*b*) clinical, and (*c*) preventive.

(a) *Pathological.*—This should comprise a study of the life-history of the tubercle bacillus and the methods of culture and its relationship to other acid-fast bacilli.

Training should be given in the best methods for the determination of the presence of the tubercle bacillus in discharges, secretions, and tissues. More particularly, the various concentration methods, *e.g.*, the anti-formin method, should be reviewed, and such other methods of staining, *e.g.*, that of Much, as may be introduced from time to time.

This part of the course should also include the principles of immunisation—passive and active—and the production of sera and vaccines. It would include the careful study of tuberculin, the underlying pathological principles, the varieties, the methods of preparation, the rationale of its use, and the action of the different toxins.

It would likewise comprise the consideration of serology, including opsonin-estimation, the value of precipitin and agglutinin reactions, and complement-fixation.

Opportunities should also be given for training in experimental inoculation, for the purpose either of diagnosis or research.

Ample opportunities should be afforded for the study of the morbid changes occurring in various tissues and organs invaded by the tubercle bacillus.

(b) *Clinical.*—This should include the thorough study of tuber-

culosis as an infective disease. The outlook must not be limited to one particular group of affections; it must comprise the clinical manifestations of tuberculosis in the widest sense.

All the methods of diagnosis should be rehearsed and refined, all adaptations of physical diagnosis should be studied. This will include X-ray examination.

Recent advances in the use of tuberculin in diagnosis have considerably widened the outlook in this department. Opportunities should be given for observation as to the value of the various applications of the tuberculin test—mucous, cutaneous, percutaneous, subcutaneous, etc.

The significance of a graphic system of clinical records should be inculcated. As far as possible uniformity of method should be followed. The principles of clinical classification should be similarly expounded.

The principles which underlie prognosis and the factors which guide its determination should be discussed in relation to cases in course of treatment.

From the therapeutic side full opportunity should be given to study the physiological measures included under the term "sanatorium treatment." The following points should especially be considered:—the value of a fixed regimen, aero-therapy, rest and activity, dietary, skin hygiene, clothing.

The specific treatment of tuberculosis by tuberculin should form an important part of the course. Occasion should be taken to show as many cases as possible under treatment with one or other variety of tuberculin. Such points as the following would naturally be included, namely, the immediate effects of tuberculin therapy, general and local, the ultimate effects, the selection of cases, the methods of use, the principles of dosage, and the limitations of tuberculin therapy.

In addition to this, the possibilities of chemo-therapy should be considered, and the significance and value of drug treatment generally.

(c) *Preventive.*—It is most important that opportunity should be given for the practical study of preventive methods at the various institutions concerned with this part of the work, more particularly the Tuberculosis Dispensary. The activities of a well-organised Tuberculosis Dispensary are varied and complex.

The object of the Tuberculosis Dispensary is to constitute a centre where the varying types of tuberculous disease can be suitably handled—a centre of information—a collecting centre for

patients, where advice and treatment on modern lines are available, and especially a centre from which there passes to the homes of the people a practical knowledge of the great principles of prevention through the visits of specially trained doctors and nurses. New methods are necessarily developed from time to time at the Tuberculosis Dispensary, and these are worthy of study.

The great principle on which the Tuberculosis Dispensary rests, viz. that tuberculosis is *to be sought for*—that it is not sufficient to wait until cases of tuberculosis present themselves—cannot be too much enforced. One of the most valuable lessons which the Tuberculosis Dispensary affords is the significance of the "March-Past" of the household, whereby cases are determined at the earliest possible stage. The methods and results of the "March-Past" and the measures to be enforced for the correction of faulty environment are matters of first moment. They should be studied *practically*.

In addition to this, particular attention will be paid to the importance of suitable correlation and co-ordination of the different factors which go to form an efficient anti-tuberculosis scheme.

NOTES ON SOME CASES OF ECLAMPSIA TREATED BY VERATRONE.*

By F. W. N. HAULTAIN, M.D., F.R.C.P.

Our knowledge of the pathology of eclampsia is so scanty and imperfect, and necessarily our treatment so inefficient, that anything which offers the slightest hope of mitigating the ravages of this complication of pregnancy must interest the Fellows of this Society.

Among its varied manifestations, so far as I have been able to determine from a somewhat large experience of eclampsia, one alone seems to be present in every instance, viz. much increased blood-pressure. This is usually, though not invariably, associated with increase of the pulse-rate. That this high vascular tension, whatever its cause may be, has much to do with the actual convulsive seizures I am convinced, and much of the treatment recommended has been on the lines of its reduction. To this, blood-letting, thyroid extract, and the nitrites probably owe the little success they have been shown to exercise.

For many years, veratrum viride has been used with considerable benefit, and was considered as a specific among some of the

* Paper read before the Edinburgh Obstetrical Society, July 1913.

older authors. Personally, I have long been favourably disposed towards it and have used it frequently when opportunity offered, with apparently decided success. Unfortunately, however, the only available preparation was the tincture, which in most cases was impossible to exhibit by the mouth on account of the comatose condition of the patient, and when administered hypodermically it gave rise to much local inflammation from its irritating action.

Recently, however, Messrs. Parke Davis & Co. introduced a hypodermic preparation of the essential alkaloids contained, viz. veratroidine and jervine, under the name of "veratrone," and this I have used in the cases later to be described.

The paramount action of veratrone is as a vascular depressant, though it is said also to be a spinal sedative—a combined action which seems ideal for the treatment of eclamptic seizures. It is made up in 1 c.c. sterilised ampules, and on injection intra-muscularly gives rise to no local untoward effects. As will be noted from the cases described, its action is not only marked, but exceedingly rapid.

The cases are as follows:—

Case I.—Primipara had shortly after delivery 2 severe fits. Urine very scanty, and solid on boiling. B.-P. 160; pulse 106. Injection of 1 c.c. veratrone. In 30 minutes B.-P. 120; pulse 75. In 70 minutes B.-P. 105; pulse 50. No further fits. Recovery. The only other treatment was a hot pack.

Case II.—Primipara developed fits shortly after delivery. ½ gr. morph. was given immediately and stomach washed out, but fits continued. Morph. repeated till 2 grs. given hypodermically, but fits continued. On first seeing her, after she had had 11 fits, B.-P. 160; pulse 94. Urine solid. One c.c. of veratrone was given. In 40 minutes B.-P. 104; pulse 60. Patient had no further fits, but did not recover consciousness for 36 hours—probably due to morphia-poisoning. After this she made an uninterrupted recovery.

Case III.—V-para with history of hystero-epilepsy. At 9 A.M. 28th February had a convulsion, for which she was given ½ gr. morph. Within the next three hours 4 more fits occurred. Urine scanty, and solid on boiling. When I saw her at 12.30, B.-P. 160; pulse 85. Os slightly dilated. One c.c. veratrone was now given. Within an hour B.-P. 105; pulse 72. Child born without further fits at 5.20. Immediately after delivery, however, she had another fit. B.-P. 150; pulse 80. One c.c. veratrone again given. No further fits; but she became maniacal, and had to be sent to an asylum.

Case IV.—III-para. Previous confinements difficult. Had suffered from kidney disease, with œdema, for over a year. Eight months preg-

nant. Had in the course of eight hours about 10 fits. Urine scanty, highly albuminous, and containing blood. B.-P. 150; pulse 85; temp. 98·6°. One c.c. veratrone given. In half an hour B.-P. 100; pulse 63. Still comatose. Three hours later her B.-P. went up to 120, and her pulse 120; temp. 100·6 F. One c.c. veratrone again given. In 20 minutes pulse 88; B.-P. 108. From this time onwards the pulse and temperature gradually rose till, 7 hours later, just before she died, they recorded pulse 160; temp. 108 F. Half an hour after death the temperature in the axilla was 109° F.

Case V.—Primipara, shortly after labour, had first fit, after which she had 8 within the next four hours. B.-P. 170; pulse 108. Urine solid on boiling. One c.c. veratrone given, after which only 1 fit occurred, and in 40 minutes B.-P. 105; pulse 56. Complete recovery.

Case VI.—II-para. Six months pregnant. Six fits. Urine very scanty and solid. Last fit at 3.35. 3.40, B.-P. 160; pulse 104. One c.c. veratrone given. 3.45, B.-P. 145; pulse 104. 3.50, B.-P. 140; pulse 108. 4 P.M., B.-P. 125; pulse, 84. 4.10, B.-P. 110; pulse 68. 6.35, fit; B.-P. 150; pulse 88. 6.50, fit. 7.30, fit; B.-P. 160; pulse, 94. One c.c. veratrone given. 8 P.M., B.-P. 110; pulse 60. Complete recovery, and in 4 days no albumen in urine. Since that time she has remained well: is taking milk and farinaceous diet The pregnancy is progressing favourably. No trace of albumen is present, and her confinement is now daily expected.

Case VII.—Primipara during labour had 2 fits. B.-P. 165; pulse 110. One c.c. veratrone given. In 45 minutes B.-P. 110; pulse 65. Three hours after labour, a severe fit; B.-P. 160; pulse 80. One c.c. veratrone given. In 30 minutes B.-P. 105; pulse 54. No further fits. Complete recovery.

In perusing the foregoing, one cannot but be impressed by the rapid and marked diminution in the blood-pressure and pulse-rate after the use of veratrone, and the consistency with which fits are inhibited while the vascular tension is low. The pulse would seem also to indicate in a general way the diminution in pressure; and, so far as the cases described are concerned, it may be assumed that a pulse of 60 or below indicates a tension consistent with safety. I should, in future cases, be inclined to aim at a pulse below 60, and press the veratrone to that end.

So far as I can learn, veratrum viride is not a dangerous poison, and can be given with comparative safety till the pulse falls well below 50.

It must also be noted that its action is somewhat evanescent, and the patient therefore must be carefully watched in case of a return of high pressure and subsequent fits, as seen in Cases III., VI., and VII.

Case VI. calls for special comment. It is of interest in showing the apparently temporary nature of some cases of eclampsia, and that if the effects of the poison be successfully combated there may be no return of the symptoms, even though pregnancy continues. I have in my experience had seven such cases—no other, however, so early as the sixth month. All of these, I need hardly say, require most careful dieting and watching as regards the return of albuminuria.

In practice, my object is to obtain in all cases a diminished blood-pressure. I have, after a prolonged trial, entirely discarded the use of morphia, as I consider it kills more patients than it cures, and at the best masks the symptoms of coma. Blood-letting is a good vascular depressant, but the subsequent injection of salines seems to me to do away with the good previously acquired. Chloroform would appear to act as a poison similar to that considered to be the cause of eclampsia, and is dangerous. Beyond the hot pack to induce sweating, washing out the stomach, and at the same time leaving therein 4 to 6 ozs. of Epsom salts, I have used no other form of treatment in the cases described.

I have brought these cases before you merely in the hope of stimulating the Fellows of the Society, should opportunity offer, to give this method of treatment a trial. It is in no spirit of confidence I speak from the marked beneficial results acquired in these too few cases. The treatment is mainly symptomatic and empirical and thus scientifically unsound, yet if even in a small degree it can be shown to be beneficial in combating this dire complication of pregnancy, one cannot but be thankful.

CAN THE URINARY BLADDER EMPTY ITSELF?

By A. G. MILLER, M.D., F.R.C.S.

ANATOMISTS tell us that the bladder is a muscular organ, and physiologists say that the function of the detrusor urinæ is to empty the bladder. The mechanism is twofold—relaxation of the sphincter and contraction of the detrusor. Also the action is essentially reflex, but generally more or less voluntary. Once the flow of urine is started nothing should prevent the bladder being thoroughly emptied under normal circumstances. It is an accepted fact, therefore, that the bladder can empty itself, and ought always to do so without extraneous assistance.

How does it happen, then, that residual urine is so common in men somewhat advanced in life? We can answer this question best by considering the principal causes that may prevent complete

emptying of the bladder. In the first place there may be loss of muscular power by overdistension or from debility. The former usually occurs suddenly, the latter gradually. Nervous causes may give rise to retention of urine, as in tabes, when the sensibility of the bladder is lost and the reflex is not responded to properly.

A more frequent cause of residual urine is obstruction in the urethra, the two principal factors being stricture of the urethra and enlarged prostate. Associated with the former one often finds hypertrophy of the bladder, whereas in the latter case dilatation with atony more frequently exists from chronic distention by the residual urine.

Another cause of non-emptying of the bladder which I have elsewhere suggested I have described as "an acquired bad habit." Habit is, I am convinced, a frequent cause of residual urine, acquired perhaps long before the symptoms of residual urine are specially marked. In the young the act of micturition is easily accomplished, the urine being passed forcibly in a full stream, and the last drops expelled from the urethra by the accelerator urinæ. Thus thorough evacuation occurs, and is completed quickly. As man advances in age all his functions take longer to perform, and perhaps his patience does not increase correspondingly. Many a man becomes more impatient because life seems to shorten. There are so many things to do, and there is less time (apparently) in which to do them. Whether this is the case or not, there is no doubt whatever that an old man takes longer to pass his water than a young man. There are many things that probably contribute to this. But we are not specially interested in these at present. What we want to ascertain is whether, given plenty of time and patience, the bladder of an old man is capable of emptying itself.

To this question I have no hesitation in answering that it ought to be. When the flow of urine is started, in the case of an old man, it comes in a full stream at first, then gradually, if no abdominal pressure be exerted, becomes smaller and less forcible, until the stream becomes drops. In this way the whole of the urine may be expelled from the bladder and urethra without any assistance from the abdominal muscles. This, as I have stated, requires time and patience, especially patience. I do not say that this is the usual manner of procedure—far from it. A man seldom passes water except when obliged to do so by a feeling of discomfort, and very often (perhaps usually) when there is some urgency.

Accordingly, he does not let the bladder empty itself by reflex action, but tries to expedite the process by voluntary contraction of the abdominal muscles. When there is any great hurry and limited time (as at a railway station) the action is generally incomplete. Relief of discomfort being what is sought, the process is arrested when that relief is obtained. This is an occasional occurrence perhaps in a busy man's life, or it may be somewhat frequent. But as life advances and age comes on, with, as I have said, slower processes and less time (apparently) in which to perform them, the incomplete act becomes more frequent and may become habitual. In this way residual urine forms and accumulates from mere habit.

If residual urine should occur in this way, and I am convinced that it is more common than many suppose—unaccompanied by any pathological condition (unless perhaps some atony of the bladder muscle)—the residual urine having been acquired by habit, it ought to be possible to get rid of the residual urine by training the bladder to resume its normal function. That this can be done has been proved in the experience of a good many, who have testified to the fact. If there is no obstruction to the flow of urine, the bladder should empty itself. If it does not do so it should be trained—exercised—as one would do in the case of any other muscle.

But what about those cases in which there is an enlarged prostate and consequently some obstruction to the flow of the urine along the urethra? I must say that I do not think that this should make any great difference. If the man can pass water at all he should be able to empty his bladder, only it will require more time and more patience than if there were no obstruction. What is required is that the man should be possessed with the confidence that he can empty his bladder—that, given time and patience on his part, his bladder is capable of being trained to empty itself thoroughly.

REPORT ON THE WORK OF THE CLINICAL MEDICINE RESEARCH LABORATORY, ROYAL INFIRMARY, EDINBURGH.

By H. RAINY, M.D.

The Clinical Research Laboratory of the Royal Infirmary owes its origin to the late Dr. George A. Gibson, who in the year 1908 received from an anonymous friend a considerable sum of money for the purpose of medical research by physical methods. Encour-

aged by this liberality, Dr. Gibson, who at first had merely contemplated the introduction of certain pieces of clinical apparatus into his own wards, resolved to apply to the Managers for special accommodation which would render the work of the laboratory more widely available. To this application the Managers responded sympathetically, and placed the needed accommodation at his disposal. Eventually trustees were appointed to carry the plan into execution. The original trustees were Sir Thomas R. Fraser, Dr. George A. Gibson, and Dr. Harry Rainy, the last of whom has also acted as organising secretary and treasurer. After the lamented death of Dr. Gibson, Dr. William Russell was appointed as trustee in his place.

The laboratory was equipped during the summer of 1910, and was formally opened by Sir Clifford Allbutt on the 13th of October of that year. The trustees have to express their gratitude to the Managers of the Royal Infirmary for the cordial co-operation which they extended to the scheme, both during the preliminary negotiations and since the laboratory was opened. At the wish of the Managers the duty of acting superintendent in the laboratory was imposed on the junior assistant-physician for the time being, and the trustees desire to take this opportunity of acknowledging their appreciation of the willing service which the successive occupants of that post have rendered. They also wish to express their obligations to the Carnegie Trustees for financial aid, which has enabled them to engage a trained mechanical assistant.

The equipment of the laboratory cost the trustees much time and thought. It was eventually decided that the organisation should be undertaken in a sectional manner, one group of workers being formed and supplied with apparatus for some special department of research, and, when their work was well under way, extensions of the scheme to other departments of medicine being successively organised. In furtherance of this object, one of the rooms provided by the Managers has been supplied with the most recent physical apparatus for the study of disorders of the circulation. Another room is equipped with certain pieces of X-ray apparatus which were not available in the ordinary X-ray department, and which the trustees felt would be of very great value in many of the investigations which they propose to initiate. Dr. W. T. Ritchie, who, shortly after the completion of the laboratory, was appointed an assistant-physician to the Royal Infirmary, has directed his attention to the study of problems connected with the circulation, and has been assisted by a number of younger workers.

A second group is now being formed under the guidance of Dr. Comrie, and their work will consist in the examination of disorders of the alimentary system by modern physical methods.

In addition to the papers which are referred to in the accompanying review, several others are in process of completion, and it is hoped that one on "Problems Connected with Blood-Pressure in the Peripheral Circulation," which was commenced by the late Dr. Gibson and Dr. Rainy, may shortly be ready for publication.

The following papers have so far appeared as the result of work done in the laboratory:—

In December 1911 Dr. Gibson delivered an address on "Cardiac Debility and Cardiac Dilatation"[1] before the Bradford Medico-Chirurgical Society, in which he outlined the work which was being undertaken by Drs. W. T. Ritchie, Hope Fowler, and D. Halliday Croom, and indicated how the orthodiagraph and string galvanometer could be utilised to establish the diagnosis of various types of heart disease in doubtful cases.

In September 1912 Drs. Hope Fowler and W. T. Ritchie communicated their observations on "Orthoradiography of the Heart and Aorta"[2] in health and disease. Their conclusions may be summarised as follows:—

I. *In Mitral Incompetence.*—(*a*) With compensation there is no marked abnormality of outline. (*b*) With failure of compensation there appear successively (1) increase in prominence of the left auricular and pulmonary curves; (2) general enlargement of heart shadow, the left ventricular curvature being increased and passing upwards into the auricular or pulmonary curve. (*c*) With yielding of the tricuspid valve there is enlargement in all directions, and marked bulging of the right auricular curve.

II. *In Mitral Stenosis.*—(a) *With physiological rhythm of auricles* the heart shadow is somewhat vertical, with unusually distinct demarcation of the curves. There are also enlargements of the right auricular, the left auricular, and the pulmonary curves, especially the pulmonary. Sometimes the left ventricular curve is small.

(b) *With auricular fibrillation* a large "globular heart" is nearly always present (Figs. 1 and 2). The right auricular curve is lengthened and projects to the right. The left margin is displaced outwards.

III. *In Aortic Incompetence.*—The heart is usually, but not constantly, enlarged. In grave cases the outline corresponds to

the "recumbent egg shape" of Groedel. As a rule the enlargement is less than in fibrillation, and the long axis of the heart is more horizontal.

IV. *In Combined Aortic and Mitral Incompetence.*—There is globular dilatation, with increase of all the diameters.

The paper also contains illustrations of the value of the orthodiagraphic method of determining the site and size of aortic aneurysms, and the advantages to be obtained by checking percussion in difficult cases by means of orthodiagraphic shadows. The most important part of the paper relates to the shape of the heart in auricular fibrillation, as no observations had previously been published on the subject.

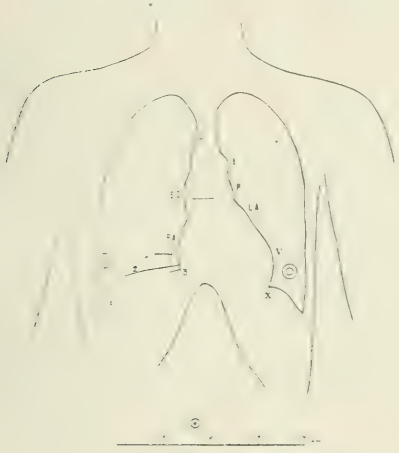

FIG. 1.
Normal heart: Female patient.

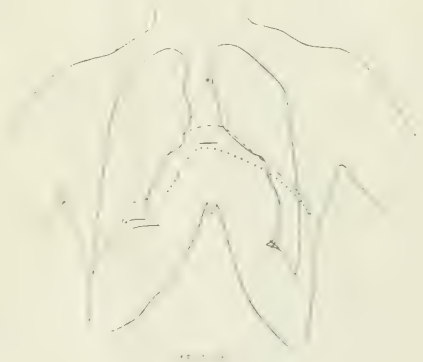

FIG. 2.
Auricular fibrillation: Female patient.

In autumn, 1912, Dr. Ritchie published an important paper on "The Action of the Vagus on the Human Heart,"[3] which was followed by a communication read before the Medico-Chirurgical Society,[4] where the therapeutic aspects of the same subject were discussed. Stimulation of the vagus was accomplished by pressure in the neck, and paralysis of the vagal endings in the heart by hypodermic injections of atropine. It was found that stimulation of the right vagus was more efficient than that of the left in producing changes in cardiac rhythm, though in some cases pressure on the right vagus failed to produce any obvious effect. It was also found that stimulation has most effect on the auricles and on the auriculo-ventricular bundle, and little effect on ventricles. The observations are summarised in the following

table. In some cases the results of the experiments of physiologists on animals are included, in brackets, for the sake of comparison :—

THE EFFECTS OF STIMULATION AND PARALYSIS OF THE VAGUS ON THE VARIOUS PARTS OF THE HUMAN HEART.

I. STIMULATION BY COMPRESSION.	II. PARALYSIS BY ATROPINE.
A. AURICLES.	
1. Rate. Auricular diastole lengthened, degree varies, never any primary acceleration.	1. Rate, accelerated. There may be a primary retardation.
2. Excitability. (Depressed in animals.) In man certainly no evidence of primary increase, nor definite proof of primary depression. In two cases some increased excitability as an after-effect.	2. Excitability. (Increased in animals.) No *evidence* of increased excitability.
3. Contractility. (Depressed in animals.) In man depressed. Summit *P* may be lowered, or form of auricular curve altered.	3. Contractility. (Increased in animals.) Insufficient material for definite conclusion. Perhaps the acceleration masks an increase in contractility.
4. Conductivity. (Depressed in animals.) Only one tracing shows lengthening of auricular systole.	4. Conductivity. None of the records show shortening of systole. The vagus seems to influence conductivity less than rate.
5. Tonicity. (Depressed in animals —[Gaskell].) In some cases a slow change in potential occurs during and after stimulation. Further investigations are being carried out.	5. Tonicity. No conclusive observations.
B. AURICULO-VENTRICULAR BUNDLE SYSTEM.	
Conductivity. (In animals depressed — [retarded].) In man does not usually cause depression, though the whole heart rate may be retarded, but in rare cases compression of right vagus lengthens *As-Vs* interval.	Conductivity. (In animals increased—[accelerated].) In human beings also increased, *e.g.*, after digitalis heart-block. There may be a short initial depression of conductivity.

Excitability.—Cannot be dissociated from action on auricles and ventricles.

C. VENTRICLES.

(a) *In Complete Heart-Block.*

(Three Cases)

Uninfluenced by vagus compression or atropine.

(b) *In Partial Heart-Block.*

Effects observed are the result of changes in rate or strength of auricular beats, or of altered conductivity in bundle system.

(c) *In Normal Hearts.*

Vagus Compression.	*Atropine.*
1. Rate. Follows that of auricle. Escape from vagus inhibition may be slower than in auricle.	1. Rate. Follows auricle.
2. Excitability. No proof of depression.	2. Excitability. May cause disappearance of ventricular extrasystole, *e.g.*, in cases of auricular fibrillation where digitalis has been given.
3. Contractility. No marked effect. There may be a slight increase in strength of beat if heart rhythm is slowed.	3. Contractility. Effect depends mainly or wholly on the degree of acceleration.
4. Conductivity. Practically unchanged.	4. Conductivity. Any shortening of ventricular systole is very slight or wholly inappreciable.

Auricular Fibrillation. — Auricular fibrillation is commonly regarded as due to increased excitability of multiple foci in the auricles.

But the effects of vagus compression and of atropine suggest that depression of conductivity is also an important factor in the production of fibrillation in man, because—

1. When the auricular fibres contract frequently, and without co-ordination, the outgoing stimuli will be rapid, weak, and of varying intensity. The weakest of these will be soonest blocked, the strongest travelling furthest.
2. It has been shown experimentally that moderate vagus stimulation favours the onset of fibrillation, and that atropine may cause its disappearance, whereas if auricular fibrillation were due solely to increased auricular excitability, the opposite results should ensue.

   The author, however, has never been able either to produce or arrest fibrillation by vagus compression. By means of digitalis (following Mackenzie's suggestion) he has been able to transform auricular flutter into fibrillation.
3. Auricular fibrillation has been found to be associated with diffuse fibrosis of the auricular walls. This must impair stimulus conduction, and if to this is added the depression of conductivity caused by vagus stimulation, the impairment may become sufficient to permit of inco-ordinate contraction of the irritable muscle fibres.

If this explanation be correct, improvement in conductivity should be effective in arresting fibrillation, and atropine might be expected to be of service in this respect. In practice this is seldom or never found to be the case, as its beneficial action on the auricles is counteracted by coincident improvement in stimulus propagation to the ventricles. It might, however, help if the ventricular rate is unduly slow.

When coupled ventricular beats follow the administration of digitalis in auricular fibrillation, the second beat originates in the ventricles. Compression of the vagus fails to produce the phenomenon, and therefore it may be inferred that the effect is not due solely to a depression of conductivity in the A-V bundle by the drug.

In auricular flutter neither vagus compression nor atropine appears to influence the heart rate.

The escape of the human auricles from vagus inhibition is shown to be gradual, and to commence during the period of compression, and the auriculo-ventricular bundle is found as a rule to recover more quickly than the auricle.

The mode of ventricular escape is not constant, and during escape neither auricular nor ventricular beats attain a greater strength than they normally possess.

Extra-systoles may appear during this period, and although their occurrence is sometimes of no importance, yet they may reveal a previously latent alternation of pulse beats; this is of grave prognosis, as it is a sign of myocardial insufficiency. Extra-systoles may similarly be evoked by an injection of atropine.

In the communication to the Medico-Chirurgical Society[4] it is shown that digitalis should be given in small doses for long periods in cases where vagus stimulation is found to reduce auricular tachycardia. If vagus stimulation proves ineffective, the action of digitalis is much less certain, although, owing to its action on the myocardium, it may be of use even where the vagus effect is not developed.

Vagus stimulation, by depressing excitability, should improve supra-ventricular, extra-systoles and auricular flutter, whilst atropine should be hurtful in such cases if the theory which attributes their occurrence to increased excitability offers a complete explanation. Clinical experience, however, proves that the reverse often holds good, and it has been found that digitalis may do harm by inducing ventricular extra-systoles, and that

such extra-systoles may at times be reduced in number by the exhibition of atropine.

It is also shown that many cases of fibrillation of the auricle obtain benefit from doses of digitalis, the explanation being that the conductivity of the auriculo-ventricular bundle is depressed and the ventricular rate thereby lessened, whilst atropine may be of service in partial heart-block, especially if associated with the Stokes-Adams syndrome.

In cases where the contractility of the ventricle is depressed, and the patient exhibits a *pulsus alternans*, it is of great importance that the ventricle should not be hurried, and atropine is clearly contra-indicated. But vagus stimulation may weaken the ventricular beats in certain cases of this kind, and therefore digitalis, if used at all, must be most carefully watched, but it may sometimes be useful, as the slowing of the ventricular beat which it induces may promote recovery of contractility.

A paper on "Auricular Flutter" by Dr. Ritchie appeared in the *Edinburgh Medical Journal* for December 1912.[5] It supplements and develops observations previously published by him in conjunction with Dr. Jolly, and contains records of six additional cases in which careful observations were made, including electrocardiograms in three. The symptoms in such cases vary considerably, and Dr. Ritchie has divided them into four groups:—

1. Cases where the symptoms are due to acceleration of ventricular rate (palpitation, vertigo, precordial pain, dyspnœa) in the absence of previous cardiac disease.
2. Cases where previous symptoms of failing heart are suddenly aggravated by supervention of flutter.
3. Cases with partial heart-block. The pulse-rate is usually slow, the beats irregular, and sometimes coupled.
4. Cases with complete heart-block, pulse not altered, supervention of flutter.

The treatment consists in rest, nerve sedatives, and digitalis or strophanthus. The effect of digitalis is due to its action on the auricle and auriculo-ventricular bundle. The transformation of flutter to fibrillation is not due to any depression of auricular excitability, but digitalis and strophanthus, by depressing auricular conductivity, may evoke fibrillar contraction in auricular muscle fibres when excitability is excessive.

Dr. Ritchie has further published a communication on "The Absence of Certain Mitral Murmurs in Mitral Disease."[6] It

has long been known that mitral murmurs may disappear and reappear in a most disconcerting manner. Balfour, in his "Clinical Lectures on Diseases of the Heart and Aorta," has laid special stress on the recognition of this fact, and emphasised the importance of recognising that the disappearance of a presystolic murmur may indicate a weakening or failure of the auricular myocardium. He further traced the gradual evanescence of the murmur through a stage in which it is represented by a mere thump or snap immediately associated with the first sound. Advances in cardiac pathology have enabled observers to associate the disappearance with definite alterations in the cardiac functions, and especially with auricular fibrillation. But Dr. Ritchie points out that in certain cases fibrillation cannot be assumed, and by means of the electrocardiograph he has been able to show that, either from impaired conductivity or cardiac acceleration, the auricles sometimes contract whilst the ventricles are still in systole, in which case the former are naturally unable to expel their contents into the latter, and hence no auriculo-systolic murmur can be produced.

Dr. Ritchie, in conjunction with Dr. Cowan, has likewise shown that in cases of mitral regurgitation, if an extra-systole of the ventricle coincides with the normal auricular systole, the systolic mitral murmur may be abolished or modified.

An important preliminary communication on the registration of heart sounds was made by Drs. Watson-Wemyss and Gunn in April, and it has been printed in the *Edinburgh Medical Journal* for August 1913.[7] These observers have been entrusted with the Bock-Thoma apparatus for simultaneously recording heart sounds and electrocardiograms, and they have been engaged in the study of the exact times of occurrence of the various varieties of cardiac murmur.

In view of the fact that some workers still teach that presystolic mitral murmurs are ventriculo-systolic in time, it is of great importance that methods wholly devoid of subjective errors should be applied to determine once and for all the exact point at which the various murmurs occur in the cardiac cycle, and the Bock-Thoma instrument seems likely in expert hands to furnish the necessary data.

The paper is accompanied by illustrations of phonocardiograms of the normal heart and of various cardiac murmurs.

In *Heart*, for June 1913, Dr. Mathewson published a paper which contains details of four cases of "Lesions of the Branches

of the Auriculo-Ventricular Bundle,"[8] studied with the string galvanometer. In Case I. the symptoms were dyspnœa, œdema, enlarged heart, with a systolic apical murmur, high blood-pressure, and a pulse slightly irregular, with a rate of 90 per minute. The cardiograms showed abnormality in the ventricular tracings, which, however, followed the auricular at the normal interval. From the type of abnormality the case can be classed with some which have been already recorded, where the autopsy revealed a complete interruption of the right branch of the bundle.

Case II. showed dissociation of auricle and ventricle, whilst the tracings also indicated (by the abnormal form of the ventricular complexes) that the right branch as well as the main stem of the bundle was involved.

Case III. suggested a transient obstruction of the left branch, and Case IV. transient obstruction occurring alternately in the right and left branches.

Although the study of such cases has not so far been of direct clinical or therapeutic importance, they are likely to throw considerable light on some of the problems of cardiac activity, and they thus contribute materially to that fuller knowledge of the cardiac mechanism which must be attained if further advance in diagnosis and treatment is to be achieved in the near future.

It will be seen from the foregoing summary that much laborious and useful work has already been performed in the laboratory, and the trustees confidently look for fuller developments during the next few years.

References.—[1] Gibson, George A., "An Address on Cardiac Debility and Cardiac Dilatation, delivered before the Bradford Medico-Chirurgical Society at the Annual Meeting on 19th December 1911," *Lancet*, 4th May 1912. [2] Hope Fowler, W., and Ritchie, W. T., "Orthoradiography of the Heart and Aorta," *Edin. Med. Journ.* vol. ix. p. 197 (September), 1912. [3] Ritchie, W. T., "The Action of the Vagus on the Human Heart," *Quart. Journ. of Med.*, October 1912. [4] *Idem.*, "Vagus Stimulation and Paresis in the Treatment of Cardiac Irregularities," *Trans. of the Medico-Chirurg. Soc., Edin.*, vol. xxxi. [5] *Idem.*, "Auricular Flutter," *Edin. Med. Journ.*, December 1912. [6] *Idem.*, "The Absence of Certain Mitral Murmurs in Mitral Disease," *Edin. Med. Journ.*, May 1913. [7] Watson-Wemyss, H. L., and Gunn, J. D., "Simultaneous Electro- and Phono-Cardiograms," *Edin. Med. Journ.*, August 1913. [8] Mathewson, George D., "Lesions of the Branches of the Auriculo-Ventricular Bundle," *Heart*, 14th June 1913.

THE INCORPORATION OF SURGEONS OF EDINBURGH: THEIR EARLY ASSOCIATION WITH THE ROYAL INFIRMARY.

By C. H. CRESWELL.

In the short accounts of the Royal College of Surgeons* which have already appeared, all allusions to their early connection with the Royal Infirmary have been of the briefest description, while the events which led to their establishing an hospital of their own have also been but imperfectly related. The object of the following pages is to supply this deficiency, and at the same time to explain away an erroneous report which gained credence at the time, and which has since been repeated by contemporary writers, viz. that the Infirmary did not at first receive the support and assistance of the surgeons as an *Incorporation*. Such a statement, unless accompanied by an explanation of all the facts connected with it, is misleading, and might easily give rise to the supposition that the surgeons were not in sympathy with the undertaking. True, it was not until 1738, or nine years after the doors of the Infirmary had been thrown open, that the surgeons as a body became associated with it, but this was due to an offer of service made by them in 1729 having been rejected by the Managers. In consequence, however, of the Infirmary, or Physicians' Hospital as it was then called, being unequal to the demands made upon it, the surgeons, anxious, no doubt, to participate in the charitable work of the city, decided to erect an hospital for the treatment of surgical cases alone. This hospital was opened in July 1736, but after being in active operation for only a couple of years it was found expedient to merge the two institutions into one. In this way the Surgeons' Hospital became part of the Royal Infirmary, and the surgeons part of the Infirmary staff, for by one of the articles of the Union—and a very important one it turned out to be—*all members of the Incorporation of Surgeons were to serve in rotation under such rules and regulations as the Managers of the Infirmary might from time to time make.* For many years all went well, the Managers modifying their rules according to circumstances and for the benefit of the institution, until in 1800 they introduced

* The designation of the College has been several times changed. During its long existence it has been known respectively as the Incorporation of Chirurgeons and Barbers of Edinburgh, Incorporation of Chirurgeon Apothecaries of Edinburgh, the Royal College and Incorporation of Surgeons of the City of Edinburgh. It has held its present title since 1851.

a plan limiting the number of surgeons who were to act to six, and appointing them for a period of two years. This gave great offence to the large majority of the Incorporation, and particularly to its younger members, who hitherto had had the privilege of attending, though only for a few weeks at a time. In it they saw an infringement of their rights and a breach of the agreement of 1738. At last, after all efforts to come to an understanding had failed, the surgeons applied to the Court of Session for interdict to prevent the Managers putting their proposals into execution. This was granted, but almost immediately recalled, and both parties were ordered to state their case in memorials for the information of the Court. It is from these memorials and other sources that the following details have been elicited.

The origin of the Royal Infirmary may be traced to the members of the Royal College of Physicians, and to them is due the credit, not only of collecting a large sum of money for its erection, but also, when this had been accomplished, of undertaking to give their services and attendance without any prospect of reward. Previous to the erection of the Infirmary the sick poor of the city were attended by the physicians in their own hall. The inconvenience attached to this arrangement, and probably a growing demand for clinical study, first led them to think of providing a place where a more extended treatment of patients could be carried out. This was begun about the year 1729 on a very limited scale in a small house near the University, with accommodation perhaps for ten or twelve beds. It then became necessary to appoint a surgeon, and in response to an invitation by the Managers two proposals were made, one by the *Incorporation* of Surgeons offering to furnish medicines and operations gratis to the sick and wounded in the Infirmary for two years; the other by Mr. Alexander Monro and five other surgeons, who offered to undertake the duty of the hospital in the following manner:—

"1st. The year being equally divided amongst us, we shall in our turn regularly attend the hospital as ordinary (the time to be fixed as soon as the Managers shall accept our proposal), acting as surgeons, and dispensing out of our own shop as we do to other patients the medicines, whether external or internal, prescribed by the physicians for the sick poor, and that gratis, renouncing all claim of payment of accounts or of fee.

"2nd. In all extraordinary chirurgical cases, he who in his turn is ordinary shall call a consultation of us all, who shall meet and assist him with our advice or service.

"3rd. When the time of attendance is finished, he of us who is to succeed shall have from his predecessor an exact detail of all the chirurgical cases then in the hospital, and of the method of cure he has followed, together with a copy of all receipts ordered by the physicians for the different sick during his attendance.

"4th. On the necessary avocations of the ordinary, he shall acquaint any other of our number who shall attend, but send to the ordinary's shop to be dispensed.

"5th. This our service shall continue till the number of sick exceeds ten, or as the Committee pleases to restrict it."

The directors approved of this latter proposal, and the six gentlemen arranged the order of their attendance amongst themselves. The proposal therefore given in by the Incorporation of Surgeons was virtually rejected by the adoption of that of Mr. Monro. In this way the service in the hospital was performed by the attendance of the whole College of Physicians if they chose to do so, and by the six surgeons appointed in the manner above mentioned. The advantages of such an institution, the surgeons said, were soon felt, and under the patriotic exertions of Provost Drummond it became an object of public attention. That the plan might be more effectually executed, an application was made to the Sovereign to erect the contributors by a Royal Charter into a legally recognised corporation. Accordingly a charter was granted in 1736, bearing "that several well-disposed persons had by subscription raised a considerable sum, the interest whereof by an agreement of the subscribers and donors is to be applied for erecting a house in Edinburgh wherein poor sick, properly recommended from any part of the country, who are not absolutely incurable, are to be entertained and taken care of by the Royal College of Physicians of Edinburgh and some of the most skilful surgeons; that under the direction of the Managers chosen by the contributors a house has been hired, and so far as the interest of the fund could go poor persons have been received into it, and have been so well taken care of that many under the blessing of God have thereby been restored to their health; that this charity is so apparently of universal benefit that it is hoped the fund may be considerably increased by the donations of charitable persons, if authorised by our Royal permission, and if the undertaking shall be brought and kept under good management and regulations."

The charter then "erects, creates, and incorporates all and

every the said contributors who have already contributed to the said charitable design, and all such persons as shall hereafter contribute thereto, into one body corporate and politic, by the name of the Royal Infirmary of Edinburgh, under which name they shall have perpetual succession, and a common seal: and they and their successors, under the same name, shall be legally entitled and capable to purchase and enjoy lands, tenements, and any other heritage in Scotland, not exceeding the yearly value of £1000 sterling; and to lend such sum or sums of money to any person or persons, and upon such security as they shall think fit: and to sue and be sued; and to make such by-laws, rules, and orders, consistent with the laws of our realm, as may best conduce to the charitable end and purpose above mentioned; and generally all other matters and things tending to the pious design aforesaid to do and execute as fully and amply, in every respect, as any body corporate lawfully may do, and as if the said matters and things were herein set down."

A system of management then follows, concluding with an arrangement for an annual meeting of the whole contributors above £5 sterling each, who were to be called a General Court, and they, or a majority of them so assembled, were to have full power and authority to make and constitute such by-laws, ordinances and regulations for the management and government of the affairs of the Corporation as they should think fit, providing such by-laws were not contrary to the true intent and meaning of the above, nor repugnant to the laws of the realm.

In virtue of the powers thus conferred upon the contributors, various regulations were made by the Managers, not only for directing the internal economy of the hospital, so far as regards the sick—the immediate object of the institution—but also for cherishing the School of Medicine, as far as the hospital could serve that purpose. And foreseeing that its interest would soon be interwoven with that of the University, the Managers resolved to adopt every measure that could tend to facilitate medical education and to render it complete.

It has already been mentioned that when the College of Physicians established their hospital, an offer was made on the part of the Incorporation of Surgeons to take the management of the surgical department; this offer, however, was not accepted, as the Managers of the Infirmary were of opinion that a general Corporation Act would not answer the purpose, in regard that no such Act, though agreed to by a majority of the Incorporation,

could bind any particular members to a deed and service of charity, and that the service of the hospital ought not to be left on that footing. They therefore considered that the service would be best undertaken by such of the members of the Surgeons' Incorporation who were willing to contribute to the service of the hospital, and would sign a paper to that effect. Six members of the Incorporation, including Monro, then offered their services on the terms above stated, and on their offers being accepted they were appointed surgeons to the Infirmary by the Managers.

From this it is quite clear that the surgeons were not only willing, but anxious, to serve the Infirmary from the commencement. It is also equally plain that the Managers were determined not to permit them to do so as an incorporated body. It then occurred to them to erect another Infirmary under the name of the Surgeons' Hospital, and in 1736 they passed an Act to that effect. Their object, they said, was to alleviate the deplorable condition of the many indigent and diseased poor who languish under various diseases, and are ready to perish for want of that timely assistance which they might find in a hospital erected for their entertainment, and although the Royal Infirmary, in a great measure, answered that valuable purpose, yet they thought there were still many well-disposed persons willing to extend their charity to such a laudable object.

Previous to passing this Act the Incorporation communicated their intention to the Directors of the Infirmary by letter, which concluded with a suggestion for coalition of the two hospitals, on the grounds that by the curtailment of expenditure which would ensue, a more extensive service could be prosecuted and a more general opportunity for improvement would be given to students. As an inducement to the Managers to accept their plan the surgeons made the following offers:—"1st. We undertake to give our attendance in common with the gentlemen surgeons who have hitherto served the Infirmary, and for the six following years—a time somewhat more than equal to that already elapsed since your institution—and to furnish, at our own charges, all the medicines that shall be needful, and as long afterwards, in conjunction with them, as it shall please God to spare us, and we follow our business in this place.

"2nd. And that we shall further become donators to your hospital, by which, and the preceding article, £30 sterling yearly will be immediately saved, and much more afterwards, when you shall think fit to take in a greater number of sick persons.

"3rd. We shall further endeavour to persuade the subscribers to our foundation to allow their donations to be transferred to your stock, by which we hope something considerable may likewise accrue for the further encouragement of so good and religious a design: That, therefore, we may be all of one mind, and with the same single aim visit the sick and diseased poor in their affliction and distress."

In consequence of this letter a committee was appointed by both sides to confer on the matter, and the surgeon-erectors having afterwards been desired to give in to the Managers of the Royal Infirmary written articles of what was proposed as the foundation of the coalition, they submitted the following proposals to their consideration:—"13th May 1736.—1st. That they offer, without fee or reward, to serve the Infirmary as surgeons, conjunct with the gentlemen who have hitherto acted in that capacity; and that they consent that the manner of their attendance as to numbers and time be at the direction of the Managers.

"2nd. That they undertake, for six years after their admission, to furnish, at their proper charge, all the medicines that shall be used in the hospital, exempting throughout that period the surgeons already concerned from any share of the expense.

"3rd. That after these six years are elapsed they oblige themselves during their lives, or exercise of their employment, to furnish their proportion of all the necessary medicines gratis.

"4th. That they engage to become donators to the Infirmary to the extent of two thousand merks Scots, payable the first term after their admission.

"5th. That they will use their endeavours to persuade those who already are, or yet may become, donors to their foundation, to allow their donations to be transferred to the funds of the Infirmary."

An answer was made to these proposals on the part of the Managers, in which there is the following observation:—"As the proposers were pleased to observe, at a meeting with the Committee of Managers, that the benefit of their apprentices and students was a considerable motive to them to make the proposal for a new infirmary, or to be admitted into the old one, they may be assured that nothing is more at heart with the Managers than to answer that original design of the Infirmary of giving the students of physic and surgery all opportunities of education in their power, which the smallness of their house (that could not admit more than have hitherto had the privilege of attending there) only has

prevented them from executing. But so soon as a large house can be got that inconveniency will be removed, and no time is to be lost in providing one."

At this period no further steps towards amalgamation were taken, and the surgeon-erectors in July 1736 opened their hospital for surgical patients. In their memorial the surgeons said it was a well-known fact that their hospital was remarkably well conducted, "and the patients, in every respect, were much better attended to than at the other hospital." Its character was every day increasing, and the applications for admission were extremely numerous. From its success the "jealousy of the Managers of the other hospital was said to be excited," and the proposal for a coalition was again renewed. Consequently a committee was appointed as before, and in May 1738 the following terms were offered by the Incorporation:—

That in order to preserve an equality among the surgeons of Edinburgh, and that their apprentices and students may have equal opportunities for their improvement by serving in the Royal Infirmary, it is proposed by the erectors of the Surgeons' Hospital—

"That every member of the Incorporation of Surgeons and their successors, in all time coming, while in the exercise of their employment, shall be permitted to serve in the Royal Infirmary as surgeons upon their application to the Managers thereof for that purpose, and that their apprentices and students be admitted to attend there without distinction or partiality; for the performance of which the Managers of the Infirmary shall give sufficient security to the Incorporation of Surgeons.

"That upon their granting such security, the erectors of the Surgeons' Hospital shall, with the consent of their donors, deliver up to the Treasurer of the said Infirmary the whole stock belonging to the said hospital, for the use and behoof of the Infirmary.

"That advantages of this coalition to the Royal Infirmary will, we hope, be so obvious to all of the Honourable Managers, that we need not make particular mention of them."

After consultation, the Managers replied that as they had nothing more at heart in carrying on the charitable work of the Infirmary than (next to the taking all possible care for the right entertainment and cure of the sick brought into the hospital) to make the Infirmary as subservient as possible to the education of the students in physic and surgery, and for raising the reputa-

tion of the practice of surgery by the members of the Incorporation of Surgeons in Edinburgh, they unanimously agreed "that as soon as that part of the building first designed for the patients, which they have agreed to build, is finished—the work being already begun, and to be carried on with all convenient expedition —they will admit all the Masters of the Incorporation residing in the city and suburbs, and in the exercise of their employment, to be surgeons to the Infirmary, to serve in it on the same footing as the present surgeons do, to be classed, and their attendance and practice regulated by, the Managers; and they now actually agree that the members of the said Incorporation be surgeons to the Infirmary, to enter upon their attendance and services, according to the regulations to be made from time to time, after the building is finished, upon a paper being signed by such as are willing to undertake the service, within three months after this day, obliging themselves to serve upon the same footing, and to subject themselves to the performance of the conditions which the present surgeons of the Infirmary are subjected to.

"That the same privilege shall be extended to all future entrants to the said Incorporation, upon their applying to the Managers of the Infirmary, by a signed paper, desiring to be admitted in the terms foresaid, within three months after their being received by the said Incorporation.

"That all the young gentlemen attending the study of physic or surgery in Edinburgh, either as apprentices or students, shall be privileged to attend the patients in the Infirmary, in such order, and under such regulations, as shall from time to time be adjusted and fixed by the Managers, upon each of them paying such an annual premium to the Treasurer of the Infirmary as the Managers shall think fit to determine, and appoint to be applied towards defraying the expenses of the house and patients, until such time as the Managers of the Infirmary shall think fit to admit them gratis, upon the revenues becoming sufficient to defray the whole charges of the Infirmary.

"That during the time of building that part of the house now designed the gentlemen erectors of the Surgeons' Hospital may, if they think fit, entertain patients in the house presently possessed by them for the benefit of their apprentices until the building is finished."

On this being communicated to the Incorporation they agreed to accept the invitation, provided the Managers gave security for the continuing the whole Incorporation in their service, and that

they be admitted thereto with all convenient speed. At the same time the erectors declared that upon such securities being given they were willing to give up their hospital and transfer their stock, amounting to £500 sterling, to the Royal Infirmary.

At this stage of the transaction the surgeons took legal opinion as to the manner of carrying the matter effectually into execution, and thereafter passed the following Act :—"The Corporation taking to their consideration an Act of the Royal Infirmary, dated 19th May 1738, inviting all the members of the Corporation to serve as surgeons in the said Infirmary, and reflecting with sensible pleasure on the many advantages that will arise from the invitation if complied with, such as, that the Royal College of Physicians and this Corporation jointly concurring for carrying on this charitable work of the Infirmary by serving it in their several professions, the erection will prove a national benefit for the relief of sick poor, and a great advantage to all students in physic and surgery; that the Royal Infirmary will be secured in the service of plenty of able surgeons in all time coming; that if our brethren, the erectors of the Surgeons' Hospital, shall agree to make over the stock contributed thereto to the Royal Infirmary, it will be a considerable benefit, and augment the funds of the Infirmary, and thereby all emulation betwixt the Surgeons' Hospital and the Royal Infirmary about procuring donations, subscriptions, and contributions, etc., which has hitherto been attended with many inconveniences, hurtful to the charitable work, will happily cease, and all after-rivalship be prevented by the coalition of the two houses hereby recommended; and, lastly, the public will be infinitely pleased to see physicians and surgeons, and everyone concerning themselves in this good work, animated with sincere Christian zeal, and cordially joining hand in hand to promote this most useful piece of charity, wherein piety and policy jointly concur, the one to relieve sick and distressed poor, and the other to breed up able physicians and surgeons for the honour and service of the country, and thereby saving money to the nation by completing their education at home"; to which Act the approbation of the erectors of the Surgeons' Hospital was subjoined.

Nothing now remained to finish the business but a confirmation on the part of the Managers, and this was obtained on 19th July 1738, when, at a meeting held by them, it was agreed that William Mitchell, Adam Drummond, John Kennedy, William Wood, George Young, Francis Russell, William Wardrobe, George Langlands, George Murray, Thomas Glen, Gilbert Laurie, Joseph

Gibson, Robert Smith, John Kirkwood, Charles Ramsay, John Wallace, Harry Osburn, George Lauder, and Martin Eccles, with the six surgeons then serving in the Infirmary, and such other members of the Incorporation as shall oblige themselves to serve the Royal Infirmary in terms of the Act of the Managers, or who shall hereafter subscribe such an obligation within three months after being received into the Incorporation of Surgeons, shall be surgeons to the Royal Infirmary so soon as that part of the house now about to be built shall be fit to take in patients, under such regulations as shall be appointed by the Managers. It was also arranged that until the new building was completed the Surgeons' Hospital should be considered a part of the Royal Infirmary, and it was earnestly hoped that the Managers would regulate and settle the attendance of the six present surgeons of the Infirmary and of the surgeons formerly attending in the Surgeons' Hospital in such manner as would tend to unity and harmony, and the welfare of the whole.

The erectors of the Surgeons' Hospital then conveyed their funds, amounting to £500 sterling, and the whole effects of their hospital, to the Managers of the Infirmary.

At the same time all members of the Incorporation were assumed as surgeons to the hospital in the same manner as the original six.

The surgeons claim that the measure here adopted was no hasty one, and that the Managers, when they appointed the Incorporation in general to be surgeons to the Infirmary, did so "under such regulations as should be appointed by them," or, as it is more fully expressed above, "to serve on the same footing as the present six surgeons do, to be classed, and their attendance regulated by, the Managers from time to time."

In this way the Incorporation came to give their attendance to the Royal Infirmary, and continued to do so while the regulations were conformable to the agreement that had been made, and were not in violation of the right which the Incorporation had obtained.

Soon after this agreement the Managers proceeded to class and regulate the order of attendance of the surgeons, and ordained "That four surgeons do attend the Infirmary *per vices* for the space of a month, being two surgeons for each ward or 'floor monthly,' and the members of the Incorporation were further divided into seven classes of four each."

When this Act of the Managers was brought before a meeting of the Incorporation it was objected to by John Kennedy, a past

deacon, who gave in the letter underwritten :—"Deacon,—Having seriously considered the Act and order of the Royal Infirmary laid before this Incorporation, I am of opinion that their classing and appointing the surgeons to serve and attend there without consulting them in it is using them more like hired servants than useful members and benefactors to it, seeing they are to give their medicines and attendance to the diseased in it gratis. This, I think, a very masterly procedure, and derogatory to the honour and credit of this Society and to every member thereof, and as the Managers have begun in this disagreeable manner, I have good reason to suspect they will proceed in it. Therefore, for my part, I am resolved not to submit to such arbitrary government, and do refuse to serve or attend on it for the future."

This declinature was adhered to by David Aitkenhead, William Wood, and three others.

Nevertheless, this order of attendance continued until May 1748, when some further alterations were made, but as they were unanimously agreed to by the surgeons, there is no need to repeat them.

So matters went on till July 1766, when the Managers, after pointing out that there were several defects and inconveniences regarding the attendance of the surgeons, ordained "That all the members of the Incorporation of Surgeons shall attend monthly by turns, as at present, each surgeon, during his own month of attendance, performing the operations which shall occur, and advising the chirurgical cases in the Infirmary, but shall not have the power of substituting any other in his place, either for advising or operating; and in order to ascertain the stated and regular attendance of surgeons in the house, agreeably to the plan pursued so successfully with respect to the physicians, they hereby nominate and appoint four surgeons, viz., Messrs. James Rae, Peter Adie, John Balfour, and Alexander Wood, and declare them to be ordinary surgeons of the Royal Infirmary, ordaining them, besides attendance those months which shall fall to them by rotation, to attend together with the surgeon whose turn it shall be to wait on the Infirmary, and in his absence to advise the chirurgical cases and perform the operations that shall occur; and they hereby authorise and appoint their Treasurer to pay annually to each of the said surgeons the sum of £10 sterling in name of salary; and it is hereby declared that their offices, as ordinary surgeons, shall commence from the first day of August 1767."

The appointment of these substitute surgeons was objected to

by the Incorporation as being invidious, and as making a "distinction incompatible with the terms of their junction with the Infirmary."

They therefore presented a memorial to the Managers, pointing out the grievance. The arrangement, however, was continued, the ordinary surgeons still acting by rotation.

In 1768 another memorial upon the subject was presented, upon which the opinion of counsel had been taken, and the matter at last having been deliberately considered by the Managers, they resolved:—"1st. That they will change one of their four ordinary surgeons annually, and will add another member of the Incorporation in his place.

"2nd. That they will make this annual change and election according to seniority, and in the order in which the gentlemen above mentioned willing to act as ordinaries stand in the list above inserted. (This referred to a list given in of gentlemen who wished to serve as ordinaries.)

"And 3rd. That this shall continue until altered by the Managers, in case that at any time hereafter they shall see cause to do so."

This establishment of the four substitutes continued till 1785, when the Managers resolved to abolish the establishment of substitute surgeons and the salaries attached to it. In place of the establishment abolished, the Managers ruled that in future when a surgeon entered upon his term he should have entire charge for two months instead of one as hitherto. At the end of these two months he was to be succeeded by the next in rotation, and so on. The Managers considered this would be for the benefit of the patients in the hospital, as every surgeon in turn, by having the chief charge for two months together, would have it in his power to prosecute many cures, which a monthly rotation often prevented his having time for. Some minor details were also laid down for the succeeding surgeon.

From this time onwards until the year 1800 the attendance of the members of the College had been in conformity to these regulations. Whatever alterations were made were agreeable to the principles laid down in the arrangement of 1738, and no deviation from that arrangement was in any respect made. On 1st September 1800, however, in consequence of a memorial having been laid before the Managers by one of their number (Dr. Gregory), they transmitted to the College a minute stating their opinion "That the manner in which the surgical department is at present

conducted is not so much for the advantage of the public as the Managers wish, or might be the case if some new regulations were adopted, and that it is their duty as guardians of the public charity to make such alterations as may from time to time appear to be for the advantage of the institution. But before proceeding to consider of any new regulations for that purpose they are desirous to have the sentiments of the Royal College of Surgeons on the subject," etc.

The Incorporation, or College, as they had now become, promised to consider this letter, and soon afterwards submitted a plan to the Managers, obviating all the theoretical objections they had made. The latter, however, returned a letter disapproving of it, together with a plan prepared by themselves. By it the duty of the hospital was to be done by six surgeons, to be elected by the Managers, two of whom were to go out every two years, but who were to be entitled again to re-election after four years. Thus the surgical staff of the hospital was to consist of six surgeons, to be elected by the Managers, two always doing the permanent duty for a period of two years at a time, *and all the other members of the College of Surgeons were to be excluded.*

This plan appeared to be entirely adverse to the agreement of 1738, and in the opinion of the College quite unnecessary, as the grievances complained of might easily have been adjusted without adopting so strong a measure. They therefore, from a consideration of duty to their successors, resolved to oppose it with all their energy. Upon the disapprobation of the College being communicated to the Managers, it was suggested that a committee should be appointed for adjusting their differences, but after some further negotiations the Managers declared their intention not to depart in the main from their plan of election, and declined any conference on the head as totally unnecessary.

They then elected the following six surgeons, viz. James Russell, Andrew Wardrope, James Law, Andrew Inglis, William Brown, and John Thomson, to take charge of the surgical department of the hospital in terms of the foregoing regulations. The College, in consideration of what they called the "precipitate action" of the Managers, then applied to the Court of Session for an interdict to prevent the Managers from carrying into execution the new plans which they had adopted. This was granted by the Lord Ordinary, but upon a petition being presented by the Managers to the succeeding Lord Ordinary the interdict was

recalled, and both parties were ordered to state their case in memorials for the information of the Court.

On the interdict being removed, the Managers at once put the newly-elected surgeons in possession of the hospital, and here occurred an unfortunate incident which, it was said, pointed to the Managers being desirous of excluding from the Infirmary every member of the College except those whom they had recently appointed.

It had always been the custom, it appears, for members of the College to meet, about the visiting hour, in the consulting-room, and in pursuance of this old habit when a number had assembled as usual on the morning of the introduction of the new rules, they received the following message:—"The Managers, hearing that several of the College of Surgeons are now in the consulting-room, request those surgeons to withdraw, and leave the room for the use of the acting surgeons for whom it is intended, as, according to the regulations now established, no person has access to the consulting-room but the attending physicians and surgeons."

In consequence of this, Dr. George Wood and Dr. Harkness, two members of the College who were present at the time, waited upon the Managers, and intimated their intention of not again entering the room alluded to: they also requested to be informed if members of the College were now prohibited from walking the wards. In reply to this inquiry the Managers signified that they had no objection to their doing so at the usual hours, but insisted that they and other members of the College should behave with proper respect and decorum to the attending surgeons, and should not, on any occasion, make any remarks on their practice or conduct, or in any way interfere with them in the discharge of their duty.

This apparent act of discourtesy on the part of the Managers was not, however, so gross as at first appears. The circumstances that led up to it are these: When Mr. Russell, one of the newly-elected surgeons, took charge of the surgical department at the time appointed by the Managers, Mr. Flanagan, the retiring surgeon, was not there to hand over his patients. After waiting half an hour Mr. Russell commenced his duties, but no sooner had he begun than Mr. Flanagan came in, and in angry tones said to him in presence of the students and nurses that after the handsome manner in which he (Mr. Flanagan) had behaved to him he did not expect that he (Mr. Russell) would have taken

charge of the patients without waiting for him, and that if he had been a younger man than he was he would have spoken to him in a different way. Mr. Russell replied that he had waited some time, and that he was acting by the authority of the Managers, but that if Mr. Flanagan had behaved in a civil manner he would have requested his opinion and assistance in regard to those patients on whom operations had been lately performed, but owing to Mr. Flanagan's temper this was impossible.

Mr. Flanagan was accompanied by Mr. John Bell and his brother Charles, afterwards Sir Charles, both of whom were said to be similarly excited.

In consequence of Mr. Flanagan's conduct, which the Managers described as highly improper and reprehensible, they resolved that if any member of the Royal College of Surgeons should hereafter be guilty of such unwarrantable conduct, he should be deprived of the privilege of access to the hospital. At this moment, while the Managers were expressing their sentiments, they were informed that a large number of surgeons and an unusual number of students had assembled in the consulting-room. They then sent the message complained of.

In summing up the case in their memorial the surgeons claimed that since they legally acquired a right to be considered surgeons to the Royal Infirmary, and had been in actual possession, they ought to have been maintained in it until the question had been more deliberately considered. They also submitted that in virtue of the agreement of 1738 they could not be excluded from the Infirmary, their attendance, of course, always being regulated by the Managers agreeable to the good faith of their contract and the common principles of justice to all concerned.

The memorial of the Managers, to a great extent, covers the same ground as the one submitted by the surgeons, and need not be repeated at length. A few extracts from it, however, will be necessary to show their object in taking such a drastic step, and their reason for their belief that the patients in the Infirmary would benefit by it.

At the beginning they state that as soon as the question as to the method of regulating the surgical department was agitated, the Managers were conscious of the disadvantage of treating with the surgeons as a body in regard to attendance. They foresaw that the individual members would not consider themselves bound by an Act of the College unless it suited their

own interest. By this it was meant that the Managers had no security that the more skilful and experienced surgeons would not neglect the hospital as their private practice increased, and leave it entirely in the hands of the younger surgeons, who, although having more time at their disposal, would necessarily bring with them less professional skill and experience.

It was also pointed out that the Surgeons' Hospital was not erected and maintained at the expense of the College, but by a public subscription from all parts of the country—just as the Infirmary was. Consequently when it was handed over to the Managers of the original Infirmary the surgeons were not making over their own monies except to the extent of the 2000 merks which they contributed amongst themselves.

The Managers said they did not wish the College of Surgeons to suppose that the late regulations were adopted merely in consequence of some sudden and instantaneous impression as to the evils attending the former system of indiscriminate rotation, neither could they pay Dr. Gregory the compliment of admitting that their conviction upon this subject was produced by his memorial, although, no doubt, their opinion was much strengthened by it. On the contrary it was well known, they said, that the numerous disadvantages attending the system of indiscriminate rotation were the constant subject of regret, and that many deliberations were held with a view to altering it. Nothing prevented this being done long ago but the opposition which former experience taught them to expect from the College of Surgeons, and the difficulty of concerting a new arrangement, which, while it would be more beneficial to the hospital, would, at the same time, be equally beneficial to the School of Surgery, and, if possible, also agreeable to the College of Surgeons, whom it certainly was the wish of the Managers to please, if they could. Dr. Gregory's memorial, therefore, whatever its intrinsic merit, had no other effect, with reference to the conduct of the Managers upon this occasion, than perhaps to bring matters to a crisis, and to accelerate the abolition of a system which the Royal College of Surgeons themselves would now hardly venture to defend.

On referring to the arrangements made in 1738, the Managers pointed out that some individual surgeons bound themselves personally to attend the hospital, but the Incorporation itself came under no obligation which could be binding upon it, or upon its individual members for the time; it merely recommended to its members to accept the invitation of the Managers, leaving

it, however, perfectly open to them to refuse. In point of fact four or five of the then members of the Incorporation paid no attention to this recommendation till nearly two years afterwards, which demonstrated that the proceedings on the part of the College were not considered as creating a solemn obligation, either on the part of the College or the individual members of it.

If there was any contract at all of the members of the Incorporation attending by rotation, it was certainly a mutual contract; and if the Infirmary was bound to admit of the attendance of the surgeons by an unalterable rotation, the surgeons, on the other hand, were certainly bound to give their attendance according to the same rotation; in fact if the Managers of the Infirmary, in the course of this rotation, became bound to submit their patients to all the ignorance, rashness, inhumanity, and awkwardness which should at any time exist among the members of the College of Surgeons, certainly the College was bound in its turn to furnish to the Managers all the skill, dexterity, experience, attention, and humanity which, to the honour of the College of Surgeons, is the more distinguishing character of its members. It was then declared that as the College of Surgeons had conducted this rotation, they kept every advantage which attended the system to their own members, and threw the whole disadvantages of it upon the Managers of the Infirmary and their patients, for out of twenty-three senior surgeons on the list, it was shown that only four took their turn of duty at the last rotation. The Managers, however, did not mean by this to throw a reflection on these gentlemen, as they knew that some of them gave up attending on account of the very disagreeable circumstances occasioned by this very system of rotation.

The College was finally charged with having converted the Infirmary almost *entirely into a school*, in which their young members might acquire dexterity and experience at the expense of the patients, instead of a noble and honourable theatre, where their more skilful and experienced members could display their talents.

The result of the memorials was adverse to the surgeons, the judgment of the Court being: "the Lords refuse the desire of the petition, and remit to the Lord Ordinary to refuse the bill, without prejudice to the suspenders again laying their case before the Court in a reclaiming petition, to be presented and put into the boxes on or before the 16th day of April next" (1801).

A reclaiming note in name of the College was accordingly

presented, but the Lords adhered to their former decision by a majority of six to four.

In consideration, however, that certain of their Lordships were favourable to the claims of the College, although they were highly disapproved of by the Lord President, who insisted that without a Declaratory Action they were not entitled to be heard, the College took advice of counsel, viz., Henry Erskine, Mathew Ross, and David Williamson, as to whether it would be prudent and advisable to appeal against the judgment now pronounced. In consequence of their united opinion that it was not, the College on 16th November 1802 resolved, by a majority of 23 to 1, that no further proceedings be carried on between them and the Royal Infirmary of Edinburgh.

Thus ended one of the most serious questions the College had engaged in since its separation from the barbers in 1722.

So far, the dispute has been narrated as between the surgeons and the Infirmary only. As a matter of fact it led to a division among the members of the College, which was attended with the most lamentable results.

Although a few of the older Fellows had no particular objection to the change, and conscientiously believed the College had but a doubtful right to oppose it, it raised such a feeling of resentment in the minds of the others, particularly the younger members, who, by it, had all to lose and nothing to gain, that for two years the most bitter feelings existed. John Bell was the chosen leader of the juniors, and so vigorously did he attack Gregory's memorial that he was voted the thanks of the College.

James Law, Andrew Wood, and Benjamin Bell were all in favour of a long-service system—the last submitted a plan for the approval of the College, suggesting a term of five, ten, or even fifteen years' continuous service, but when put to the vote not a single member supported it. Schemes were also drawn up by John Thomson and others, but to no purpose. One, however, addressed to the Managers by Robert Jackson, M.D., Inspector of Military Hospitals, is deserving of more than passing mention, as it contains an interesting description of the Infirmary in the year 1800.

Dr. Jackson begins by remarking, that as Dr. Gregory, in a memorial, had painted with a profusion of colours the improper management of the surgical department of the institution, he took the liberty of bringing to view some defects in the construction, arrangement, and equipment of the hospital, which experience had taught him was a matter of more consequence to the good of

the sick than the medical prescriptions of the physician or the manual dexterity of the surgeons. The wards he describes as not exceeding eleven or twelve feet in height, the width much narrowed by the projection of closets, and the area broken and interrupted by posts and partitions which seemed to have been intended to mark divisions between the beds. Continuing, he said that the position of the hospital was disadvantageously situated for ventilation; confined on one side by a wall, on another by lofty houses, the air of it could only be preserved sweet and wholesome by the operation of strong causes acting within. The windows of the wards were not large and were badly constructed for the admission of air. The grates were small, and the fireplaces so fenced in by partitions that heat, or the circulation of air occasioned by heat, did not extend to the middle of the apartment. After pointing out how these defects might be remedied, Dr. Jackson proceeds: the frames of the bedsteads are made of iron—a material durable and little liable to contain the contagion of disease; the bottom part, however, is formed of thick and spongy rope, disposed to receive and to retain every kind of contagious mischief. The bed is, moreover, a palliasse filled with straw, a flock mattress, and bolster or pillow, which, if not actually noxious in themselves, are in many cases so offensive to the eye that the Inspector of a Military Hospital would consider it his duty to condemn them to the flames. The sheets are often dirty or ill washed, the blankets and coverlets small and beggarly, and the appearance of the bed altogether most uninviting. The patients are also allowed to retain their own clothing, though its condition be not always proper, a custom which admits the introduction of contagion into the house, while no sure means are placed in the hands of the physician or surgeon of stopping its progress when thus introduced. As the Royal Infirmary, Dr. Jackson concludes, is considered as an appendage of the Medical School of the city—a place to which young men resort to see diseases and to learn to treat them successfully—it becomes a duty incumbent upon the Managers to give effect to such arrangements as may permit pupils to approach the sick and to examine minutely the circumstances of disease without danger to their own lives.

In returning from this short digression we find that for some time the College meetings had been attended with considerable confusion. At one of these the "most scandalous scenes that ever a gentleman was obliged to witness" are said to have been enacted,

while on another occasion—the majority being against the chair—a vote of censure was actually passed on the President.

Of the principal actors who took part in the foregoing proceedings, John Bell is said never to have quite recovered his exclusion from the Infirmary; Lewis Flanagan, whose encounter with James Russell will not be forgotten, soon afterwards announced his intention of going abroad, and begged the College to furnish him with a letter of introduction to the medical colleges in Berlin and Vienna which he intended to visit. On the other hand, when the Chair of Clinical Surgery was founded in 1802 Mr. Russell was the first to occupy it, an arrangement which met with general satisfaction. The College, however, in consideration that the appointment had been made without reference to them in any way, resolved to record their opinion—that, as a public body vested with the sole and exclusive privilege of teaching as well as practising surgery in the city, they were in justice and equity entitled to some share in the recommendation or patronage of a chair which must be filled from their body, and which, without presumption, they considered themselves to be the best, if not the only competent, judges.

The reader, with all the facts before him, will now understand how it came about that the Incorporation of Surgeons did not at first serve the Royal Infirmary. He will also be entitled to form an opinion as to whether the reasons adduced by the Managers for rejecting the surgeons' offer were as *bona fide* as they appear to be.

The surgeons in 1800 had some doubts about this, and called attention to the terms of the charter (p. 330), which arranged for the sick in the hospital being attended by the *whole College of Physicians* and *some* of the *most skilful surgeons*. If their offer had been accepted in 1729, instead of Mr. Monro's, they most reasonably claimed that the charter would have included the *Incorporation* of Surgeons in the same manner as it did the Physicians. Such at least was the surgeons' opinion, and in debating the point they made a most interesting statement, which unexpectedly illustrates the *role* of the surgeon in the medical profession at the beginning of the eighteenth century. "Everyone knows," they said, "that the business of a surgeon in this country is not merely confined to surgical practice, or to the giving out of medicines as apothecaries, but they are employed as physicians-in-ordinary. Hence the surgeons of this country have always been held in a superior rank to what they are in other places. It is only at extraordinary times that the assistance of the regular physician is required and even that is very much confined to the higher and

superior classes. Hence it has always happened that in this place, and indeed over Scotland, the great bulk of the practice is confined to the surgeons. And therefore if practice is so very essential to perfection in this profession, the chance of obtaining more skilful men was infinitely greater from the College of Surgeons than from the College of Physicians. And if the Managers had been weighing with that accuracy which it is now contended they ought to have done, viz., the true end and design of their institution, they ought just to have reversed the matter, and to have taken the charter to the *whole College of Surgeons and to some of the most skilful physicians.*"

Where the Surgeons' Hospital was situated, or the extent of its accommodation, there is nothing to show. It is, however, recorded that a Captain Sutherland in 1737 presented the College with "a strange creature called ourang outang," and that it was sent to the Surgeons' Hospital until a room could be prepared for it in their own house.

In conclusion, the attention of the reader may be directed to the frequent passages which crop up accidentally, as it were, in reference to the Incorporation and the Edinburgh Medical School. The charge made against the surgeons of turning the Infirmary *almost entirely into a school* is the greatest compliment the Managers could have paid them. On another occasion (see p. 336), when addressing the Managers, the surgeons made use of the following remarkable sentence:—"And lastly, the public will be pleased to see *physicians* and *surgeons*, and everyone concerning themselves with this good work, animated with sincere Christian zeal . . . *the one to relieve sick and distressed poor, and the other to breed up able physicians and surgeons for the honour and service of the country.*" Not in these instances alone, but in many others, can be seen the hand of the surgeons slowly but securely laying the foundation of what, before now, has been referred to as the first medical school in Europe. But in this respect the College of Surgeons requires no panegyric bestowed upon it. In 1505 they begged to have "anis in the yeir ane condampnit man efter he be deid to mak antomea of quhairthrow we may haif experience, *Ilk ane to instruct utheris*"—each one to instruct others. Nobly has the old College—this Nestor of our medical institutions—upheld its vows. The good work of instructing others, commenced over four hundred years ago, they are carrying on to-day. *Floreat res Medica.*

CLINICAL TEACHING.

II.—DISEASES OF CHILDREN.

[*Contributed.*]

To many who are interested in the clinical teaching of the Scottish universities it has long seemed clear that this subject was not being given the place it deserves in the curriculum. It has been felt that in this we were behind the American and continental schools, to our disadvantage. There is now, however, a prospect that the defect will be remedied in the near future, for a recent ordinance which makes the study of the diseases of children compulsory on all students of medicine will come fully into force within the next two years. It seems, therefore, not out of place to say something to justify this addition to the task of the already hard-worked student, and to make a few suggestions as to how and where and when it can be most profitably presented to him.

Firstly, then, as to what the subject comprises. From this necessarily short course the student has to learn a number of things which will be of the greatest use to him in his future practice, although he hears little or nothing about them either in the University lecture-rooms or in the Infirmary wards. A brief summary of them may be given as follows:—

1. To begin with, there is what may be called the *Clinical Physiology of Infancy and Childhood.* The student is expected to make himself familiar with the main facts of the growth and development of a child's body, and to learn how these are modified by disease. For example, he must get to know about the growth of the skull and the closure of its fontanelles, the appearance of the teeth, the functions of micturition and defæcation and their products, as well as about the thymus, the lymphatic glands, the blood, and so on. He must also gain some practical insight into such subjects as normal and abnormal sleep, the peculiarities of the pulse, respiration, and temperature, and the characteristic reflexes of early life, including the ways in which the immature nervous system reacts to shocks of various kinds by vomiting, collapse, convulsions, laryngismus, etc. He has to acquire some knowledge also of how, and in what order, the baby gains the control of his muscles and the use of his special senses, and how he begins to walk, to speak, and to notice. He must be able to gauge the state of the child's intellect by noting his forwardness or otherwise in these matters, as well as by watching his

behaviour, and recognising any bodily defect or deformity which is inconsistent with mental health and vigour.

Not only are the processes of growth and development interfered with at times by illness, but they in their turn frequently alter the clinical manifestations of disease to a considerable extent. The student, therefore, must also learn how common ailments, both medical and surgical, are apt to wear a confusingly different aspect at different periods of life.

2. The second subject which demands attention is *Infant Feeding and Diet Disorders.* Infant feeding is a fairly wide question nowadays, and includes much theoretical information about the chemical and other properties of milk, and the uses and abuses of many other foods, as well as clinical experimentation on the effect of different diets at all ages and in all states of health.

The study of food naturally leads on to the consideration of the large class of often fatal, though mostly preventible, disorders which arise from improper feeding, such as wasting, constipation, vomiting and diarrhœa, rickets, and infantile scurvy, not to mention parasitic affections and infective diseases, like tuberculosis, which may find an entrance with the food.

3. A third group of subjects consists in *Congenital Ailments* of all kinds. These include congenital infections like syphilis: congenital injuries, like the various birth-palsies; congenital malformations of the brain, heart, stomach, and other internal organs; and the whole range of surgical deformities.

4. Then there is *Nursery Hygiene*, a small subject, but one which has not a little to do with great matters like infantile mortality and the prevention of disease.

5. The last part of the course to be mentioned, though not the least important, is the practice it should give in the *Clinical Examination of Children.* The student has not only to be told how the symptoms and signs of disease differ in childhood and how they can best be elicited, but he goes to the hospital for the special purpose of practising these things and learning physiognomical diagnosis, the handling of sick children, and the very important art of case-taking from the children's mothers.

These, then, are the subjects to be taught. The next point is *where* and *how* this instruction should be given. We may first consider how the present courses, which have met with a certain measure of success, are conducted; and then make some suggestions as to the changes which seem most desirable in them.

At present the teaching is given mostly in the wards of the

Children's Hospital, partly in the lecture-room there, and partly in the out-patient department. Three courses take place every year, except when (as has often happened in one of the winter terms) too few students come forward to form a class. When this happens, the whole of the teaching material of the hospital remains unutilised for the time, and the number of students who attend in the other terms becomes so large as to render the practical part of the course unmanageable, even when the class is divided equally between the three medical lecturers.

The University requires that the course shall last for at least six weeks, with a certain minimum number of meetings in the lecture-room, in the wards, and in the out-patient department: but the clinical course which is provided by the staff of the Children's Hospital, and which the University recognises, gives more than this. It lasts for from eight to nine weeks, and also includes surgical lectures, operations, cliniques, and out-patient work, besides some opportunities of pathological experience. The time of the student's attendance is nominally from 11 A.M. to 12. Really, however, he has not nearly a whole hour in the hospital, owing to its distance from the other buildings of the medical school; and yet all his examination of the children must be done within these forty-five minutes or so, for he cannot be in the wards in the afternoon or evening. The time for the small amount of systematic teaching which has to be given on Growth and Development, Infant Feeding, etc., and that for attending post-mortem examinations, has also, according to the present arrangements, to be taken out of these short forenoon meetings.

Under the restrictions of the present system the clinical teaching has to be given almost entirely in the form of lectures, and in demonstrating such things as can be seen by many at a time. This is partly because not a few of the students have yet to learn the ordinary physical signs or the elementary systematic facts which the cases illustrate, partly also because the numbers attending and the shortness of the time allowed usually render individual examination of the patients by the students quite impossible.

We now come to consider how the details of the course might be changed so as to render it more profitable to the students:—

(*a*) As we have already seen, some of the necessary subjects are of such a kind that they *must* be taught systematically. A few class-room lectures—say, 8 or 10—are therefore indispensable if the student is to be able to avail himself with any intelligence

of the clinical opportunities that the hospital affords. These lectures should take place at, or before, the beginning of the clinical work. They ought to be delivered by one of the clinical teachers, either in the afternoon or in the early morning, in a university lecture-room which has lantern facilities and is within easy reach of the pathological museum. It is a great pity when, as at present, a considerable part of the valuable forenoon hour has to be taken from clinical work and used in this kind of teaching.

(*b*) Part of the hospital teaching should still, of course, consist in clinical lectures and ward cliniques, in which as many cases as possible are demonstrated; but much more time than has hitherto been possible should be devoted to the individual instruction of the student in examining the children and reporting on what he finds. To carry out this sort of teaching satisfactorily, it will be necessary to divide the class into much smaller sections than at present, and to arrange that a much longer time at a stretch (say 1½ hours at least) shall be spent in the hospital.

(*c*) The teaching from out-patients should certainly form a far larger proportion of the course than it has ever yet done—probably as much as half of it. The out-patients in a children's hospital are in some respects the most important part of the teaching material, because so many of the most interesting and instructive cases remain out-patients, and are not admitted to the wards. It is also not without advantage to the student that in this department the child has to be studied, not behind the bars of a hospital bed, but in the more natural and reassuring environment of his mother's arms.

Occasional demonstrations to the whole class of groups of out-patients are most valuable; but the bulk of the out-patient teaching should be done in small sections, so that the students can examine the children for themselves, and not be merely told about them. It is especially important that they should have to take cases from the mothers, for this is an art which requires much practice, and it is a vital part of successful clinical work among children.

(*d*) At present no home-visiting is done from the Children's Hospital, either by medical officers or by students, although it is a fair question whether something of the sort should not form an integral part of the ideal "teaching unit" of the Children's Hospital. In speaking of the teaching of children's diseases in general, however, it is only right to refer, in passing, to the large amount of excellent medical work and much efficient teaching of diseases of children which has been done in the past in connection with the

various dispensaries whose work has formed such a valuable part of the clinical training of the Edinburgh medical student.

(*c*) No change seems at present practicable, or indeed desirable, in the surgical part of the course.

When the methods of the course have been improved, the matter of its duration will certainly come up for further consideration, and questions not only as to how long it should last, but also whether its ends are best attained by a short course attended daily, or by a more prolonged period of occasional hospital visits, will have to be thought out. At this stage, however, we need not discuss these matters.

At what period of the student's career should he attend the Children's Hospital? At present there are no restrictions as to this, and the cliniques are sometimes attended by men who are ignorant of the simplest facts of medicine, and unable to recognise the commonest physical signs. This is, of course, most unsatisfactory in every way. "Diseases of Children" is to be regarded as a *direct extension of clinical medicine*. It is so to a far greater degree than any of the other "Special Subjects" which are included in the curriculum. In most of these a preliminary knowledge of medicine is doubtless an advantage, but in none is it essential. To the student of children's diseases, however, a knowledge of the elementary facts and methods of systematic and clinical medicine is as necessary as a knowledge of elementary anatomy is to the student of surgery, and those who attend the Children's Hospital without it can get very little benefit from the teaching there.

Another aspect of the importance of the subject of "Diseases of Children," and of its difference from the other "Special Subjects," is worthy of note. In studying any of these subjects the student is, practically speaking, learning that subject only. When he comes to "Diseases of Children," however, his position in this respect is different, for the seventy-five medical beds and the crowded out-patient rooms of the Children's Hospital always contain a large proportion of cases of general medical interest. When he is engaged in the clinical study of the diseases of children, therefore, the student is at the same time constantly bringing into practical use the instruction which he has received from his teachers in the Infirmary, and thus enlarging and consolidating his knowledge of the art and science of clinical medicine.

Only students who have completed the work which is allotted to the fourth winter session—that is to say, students during the last 15 months of the curriculum—should be allowed to take out

the "Clinical Course of Diseases of Children," and only a third of the available students should be permitted to attend in any one term, so that the clinical classes may be kept as small as possible. In studying sick children the amount learned is generally in inverse proportion to the number of students in the class.

In concluding, another much-needed reform must be mentioned. As matters stand now, the students *know* that they will certainly not be examined clinically on almost any of the special subjects taught in the Children's Hospital. This knowledge has naturally a most unfavourable effect on the degree of attention which many of them give to the work. Were a certain proportion of the candidates sent to the Children's Hospital for part of their final clinical examination this evil would very soon be entirely removed.

RECENT ADVANCES IN MEDICAL SCIENCE.

MEDICINE.

UNDER THE CHARGE OF

W. T. RITCHIE, M.D.; EDWIN MATTHEW, M.D.; AND J. D. COMRIE, M.D.

Diuretics in Cardiac Disease.

In cases of arteriosclerosis without œdema, according to Hirschfelder (*Journ. Amer. Med. Assoc.*, 1913, lxi. 340), one may be tempted to resort to diuretics in order to remove products of auto-intoxication or to relieve a possible plethora. It is useless, however, to try to lower the blood-pressure by removing water from the body by means of diuresis, because the fluid that is withdrawn is immediately replaced from the tissues, and, as shown by Weber, diuretics may even drive an excess of water from the tissues into the blood. In such cases, according to von Noorden, it is better to spare the arteries and kidneys from overwork by light diet and restriction of salt and water than to strive for increased elimination by means of diuretics.

Active intervention to induce diuresis is advisable in cases of failing systemic compensation with venous engorgement and resultant œdema. The circulatory changes induced by venous congestion closely simulate those observed in asphyxia, and Cohnheim and Roy showed that the first effect of asphyxia on the kidney was a constriction of the renal vessels and diminution or cessation of the urinary flow. The general œdema accompanying chronic venous congestion is associated with sodium chloride retention, and some authorities regard œdema as determined by the local formation of acid products, which cause the tissues to imbibe water, rather than by changes in the walls of the

vessels. Fischer believes that the same laws of colloid imbibition govern both retention and excretion of water by the kidneys, and consequently he believes that administration of alkalies, by antagonising the effects of local acid products, is a therapeutic measure applicable in the treatment of cardiac œdema and of the associated renal condition. In health, digitalis exerts a diuretic effect by dilating the renal vessels and by some specific action on the renal epithelium. In venous congestion from heart failure, however, the diuresis resulting from the administration of digitalis is due to increased systolic output of the heart, increase of the pulse pressure, and consequent increased filtration through the glomeruli. Under the use of digitalis the excretion of urine may be increased fivefold or tenfold within twenty-four hours.

When we desire a more powerful diuresis than is afforded by digitalis we may make use of the diuretics of the purin or caffein group —caffein, theobromin, theophyllin, or theocin—which dilate the renal vessels and also act directly on the renal epithelium. The caffein series is particularly effective in cardiac dropsy, provided the renal cells have not yet become greatly damaged, and the diuresis often exceeds that obtainable by digitalis. Of the caffein group, theobromin is more potent than caffein citrate, but theophyllin is still more effective than theobromin. The most convenient of all is the water-soluble theocin-sodium acetate in doses of about 3 grains thrice daily. If the renal epithelium is much damaged these diuretics may actually diminish, rather than increase, the renal secretion. If the phthalein excretion is low, we are near the point at which theocin might do harm, and under such circumstances it is preferable to rely on digitalis. The same precautions apply to the saline diuretics—potassium acetate, citrate, and tartrate—although they are probably less irritating to the kidneys than are the caffein series.

Calomel, which is often used with excellent effect in dropsical patients, acts by depleting the tissues of water and of excess of sodium chloride. An occasional dose of this drug can do no harm. Under the continuous administration of calomel, however, a "bichloride nephritis," which chiefly affects the tubules, may arise, and consequently the drug may do more harm than good. Various physical procedures may exert a beneficial influence on the excretory power of the kidneys. Thus the circulation through these organs may be improved after the removal of ascitic fluid, after aspiration of the chest, or after venesection. Hot packs or poultices over the kidneys, relief of intestinal distension, and other measures may also improve the renal circulation and promote better diuresis. Finally, it is important to afford the damaged kidneys as much rest as is possible. This is probably effected best by giving the patient nothing but milk until he has begun to improve. The failing kidneys may also be spared further work if the excess of fluid be removed by gentle purgation or by means of Southey's tubes.

The Treatment of Progressive Cases of Pulmonary Tuberculosis.

When a case of pulmonary tuberculosis does not recover, even under the most favourable circumstances, the fatal issue is often regarded as inevitable—the case was progressive and a cure was hopeless. Mary E. Lapham (*Med. Record*, 1913, lxxxiv. 159) shows that 40 per cent. of cases recover when treatment with artificial pneumothorax is employed. If this fails, resection of ribs may be of great benefit. Sauerbruch's operation is almost devoid of danger and ensures complete functional rest for the diseased lung. Ninety cases that had been treated by operation have been reported. The recoveries, a year after the operation, amount to 20 per cent. The author points out that when we realise that the patient is becoming unable to make his own fight for recovery, we should then try to cure him by means of artificial pneumothorax; if this fails we should advise resection of the ribs.

Circulatory Disturbances of Extra-Cardiac Origin.

Attention has again been directed to this subject by Professor Wenckebach of Strassburg in his Report on Heart Failure to the International Congress of Medicine. Defective circulation of the blood naturally suggests that the cause lies in the heart, yet it is important to remember that the disturbance may originate in other ways. The three main extra-cardiac causes of circulatory impairment are (1) deficiency in the total volume of the blood; (2) the total volume is normal but too little blood reaches the heart; and (3) the heart's action is embarrassed owing to its working against abnormally high resistance.

In the first group of cases we at once think of hæmorrhage as a characteristic example. The patient's life may be saved by transfusion. Chronic and persistent hæmorrhages and chronic anæmia likewise result in defective circulation.

To the second group special attention is directed by Wenckebach. The large venous channels, and particularly those in the abdomen, form a reservoir, which may readily become overfilled at the expense of the blood elsewhere. The factors governing the circulation of the blood in the abdomen are still imperfectly understood, yet there are doubtless other factors than mere *vis a tergo*. Changes of vasomotor tone, intestinal peristalsis, and the respiratory movements of the diaphragm are probably important factors. Inspiration increases the negative pressure in the thorax and raises that in the abdomen, and thus promotes the outflow of blood from the abdomen and particularly from the liver. The circulation of the blood becomes impaired whenever the respiratory movements of the diaphragm are disturbed. This may occur when the diaphragm is pressed upwards unduly, or lies too low, when there is

mediastino-pericarditis, or when the abdominal muscles are deficient in tone. Wenckebach relates one illustrative case. The patient was a young woman who developed pneumonia a few days after confinement. The pulse was almost imperceptible and frequent: the respiratory movements were forcible but ineffective, for although the upper part of the chest was raised the lower portion was drawn in with each inspiration: the abdominal contents had sunk down into the lower part of the abdominal cavity; the epigastrium was depressed. Upon firm compression being applied to the lower part of the abdomen, whereby the abdominal viscera and the diaphragm were pressed upwards, the patient was at once relieved, the veins of the neck became fuller, and the arterial pulse stronger. A firm abdominal binder was applied, the threatening symptoms of heart failure disappeared, and the patient soon made a complete recovery. In other instances apparent heart failure may really be due to vasomotor disturbance of psychical or reflex origin, especially when it is the splanchnic area that is affected.

The X-Ray Diagnosis of Duodenal Ulcer.

The important lesions are found chiefly in the first portion of the duodenum, which is termed by Cole the "cap" and by Holzknecht the "bulbus duodeni." According to White and George (*Boston Med. and Surg. Journ.*, 1913, clxix. 157) this portion of the duodenum should be considered radiologically as part of the stomach, for its contraction corresponds with the gastric cycle, and is entirely unlike the small rapid peristalsis of the bowel. This portion is early filled, and remains filled until the stomach is empty. Lesions of the duodenum may be diagnosed with greater certainty than those of the stomach. If careful X-ray examination fails to show a normal "cap," and especially if the defect persists at a second examination, a diagnosis of a lesion in the first part of the duodenum is justified. Ulcers of the duodenum make the "cap" ragged, deformed, or displaced, or may produce little pouches which retain bismuth after the stomach and the rest of the duodenum is empty. Stenosis at the duodeno-jejunal junction is not infrequent. This may produce much dilatation of the whole duodenum. Kinking at the jejunal angle is rarely found with duodenal ulcer, and it seems improbable that the ulcers are due to such kinks and stasis. The amount of obstruction bears little relation to the size and appearance of the ulcer. An ulcer of large size may be unaccompanied by any stasis if the reflex mechanism that governs the passage of food from stomach to duodenum is uninjured. Again, if the duodenal ulcer involves the pylorus, the latter may be rigid and open, which favours rapid emptying, or rigid and small, which promotes stasis. There may be rapid emptying of the stomach at first, and yet stasis after six hours, or there may be delayed motility throughout.

The Vagotonic Pupil Phenomenon.

This sign, described by Somogyi (*Wien. klin. Woch.*, 1913, xxvi. 1331), consists in dilatation of the pupil upon inspiration and contraction of the pupil upon expiration. The sign, which is usually best seen with the first deep inspiration, is constantly accompanied by notable acceleration of the heart with each deep inspiration—the sinus arrhythmia described by Mackenzie. The pupil phenomenon is more common in young persons than in the aged, and may be observed both in sick and in healthy persons. It is probably due to the same factors as induce respiratory arrhythmia of the heart, and, above all, to excessive vagus tone, and should therefore be regarded as one of the manifestations of this disturbance of the vagus upon which so much stress has been laid by Neusser and other writers.

Transfusion of Blood.

The therapeutic possibilities of transfusion are discussed by Bernheim of Baltimore (*Journ. Amer. Med. Assoc.*, 1913, lxi. 268). Certain forms of obscure anæmia, formerly considered intractable, seem in the light of further experience to respond with gratifying improvement to blood transfusion. For example, a boy about seven years of age had suffered for several years from so-called splenic anæmia. He had repeated hæmorrhages from the stomach, and about eighteen hours after the first transfusion he vomited a large quantity of blood. His condition was so desperate that it was decided to transfuse him again. This was done, and twenty-four hours later splenectomy was performed. The child made a complete recovery, but five months later he died as the result of gastric hæmorrhage. Bernheim suggests that early transfusion may be of much benefit in cases of pernicious anæmia. Repeated transfusion should be practised in every case that seems to offer the slightest chance of success. In pellagra and in some of the obscure toxæmias of pregnancy transfusion of blood also appears to promote recovery.

W. T. R.

SURGERY.

UNDER THE CHARGE OF

J. W. STRUTHERS, F.R.C.S., and D. P. D. WILKIE, F.R.C.S.

Suture of the Heart.

Stewart (*Ann. Surg.*, July 1913) records five cases of suture of the heart with three recoveries. As regards the diagnosis of injury of the heart in penetrating wounds of the thorax it is interesting to note that while he felt sure of the diagnosis in the five cases recorded, he was equally certain that the heart was wounded in several other cases in which exploratory operation proved it intact. In these cases of

mistaken diagnosis a precordial wound existed, hæmo-pneumothorax was present, and there was profound shock. In two of them the pericardium had merely been grazed by a bullet, in another the heart was merely contused, and in two others, with stab wounds, the knife had passed between the pericardium and the lung. Lastly, in two cases of non-penetrating wounds of the thorax, shock was so pronounced as to suggest wound of the heart. Owing to the valvular nature of the opening, external hæmorrhage is usually slight in amount. When a patient lies or falls down after a stab involving the heart, the skin of the thorax and the heart ascend, making the wound valvular, and if the pleura is opened by the injury the resulting pneumothorax further displaces the heart. Consequently no conclusion can be drawn from the amount of external bleeding, which may as a matter of fact be greater from a wound which has merely divided the internal mammary artery than from one which has involved the heart. In four of the five cases the local signs of hæmo-pneumothorax were present and the area of cardiac dulness was replaced by tympany, and in four of the cases the heart sounds were audible, faint, and unaccompanied by adventitious sounds. Stewart surmises that some of the remarkable sounds described as associated with heart wounds may be due to air passing through the thoracic wall. Shock and acute anæmia were present in all five cases. In three cases the pulse though weak was 100 or less per minute. Pressure on the auricles due to blood in the pericardium was present in the one case where the pleura was intact, and in consequence there was marked venous distension in the veins of the head, neck, and upper extremities. As in most cases the pleura is wounded and the escaping blood finds a ready exit into the pleural cavity, this sign is unfortunately rarely present. In operating, Stewart excises the external wound and palpates the pericardium with the finger in the effort to detect a wound of that structure. Such detection is difficult, and it is usually necessary to expose the pericardium widely by reflecting a chondroplastic flap to right or left as may be indicated. Stewart never found it necessary to resect a portion of the sternum. After exposing the pericardium he enlarges the wound in it in the direction of the long axis of the heart and palpates the heart. Free hæmorrhage usually prevents inspection of the heart. Blood spurts continuously from it, and the wound is best located and controlled by the finger till a stitch has been inserted. This may be used as a tractor while the remainder of a continuous suture is put in, deeply, so as to take a firm hold of the heart muscle and completely close the wound. The stitch may be put in irrespective of systole and diastole. In one case Stewart was obliged to tie the descending branch of the left coronary artery. The patient recovered from the operation, and died five years later of phthisis, when interstitial myocarditis of the left ventricle was found. As the result of his experience Stewart is opposed

to draining either pericardium or pleura, and believes that the use of intra-tracheal insufflation anæsthesia, with removal of all blood, followed by complete closure of both cavities, will give the best results.

Carcinoma of the Stomach.

W. J. Mayo (*Journ. of the Amer. Med. Assoc.*, No. 35, 1913) discusses the conclusions arrived at from a study of 1000 cases of cancer of the stomach submitted to operation between January 1894 and December 1912. In 378 cases resection of the tumour was possible, in 246 cases palliative operations were done, and in 376 cases exploratory operation only was possible. He states that while diagnosis of stomach cancer cannot often be made early enough to obtain a radical cure, a diagnosis of some condition of a surgical nature, probably cancer, can be made in time to permit operative interference in more than a third of all cases. The early diagnosis does not depend on any sign or symptom due to cancer as such, but on the mechanical conditions due to the growth, therefore the recognition of such mechanical conditions should be the first aim of the diagnostician. A palpable tumour was present in 67 per cent. of the cases, and Mayo emphasises the fact that the presence of a palpable tumour does not mean that a case is inoperable. In 53 per cent. of the cases food remnants were found when the stomach should have been empty. These two signs are easily recognised, especially in cases of pyloric cancer, which amount to 75 per cent. of all cases, the remaining 25 per cent. of cancers being in the body or cardiac end.

Evidence afforded by X-ray examination is next in importance to signs of tumour or obstruction, not because it actually shows that cancer is present, but because it shows deformities and muscular deficiencies possibly due to cancer. Examination of the stomach contents during the curable stage of the disease is of relative value and not pathognomonic. Comparison has been made between 1000 cases of ulcer in the stomach or duodenum and the 1000 cases of cancer under review. In the ulcer cases the average total acidity was 63, more than five-sixths of which was free. In the cancer cases an average total acidity of 31 was found, about one-third of which was free. The more advanced the case the lower the acidity and the less the free acid content. Blood in vomit or stools, in large or small quantity, is frequently found, but its presence is not of great diagnostic value. A history of gastric disturbance precedes cancer in a large number of cases. The average duration of symptoms in the 1000 cases was more than two years, and this is taken to indicate that some lesion, ulcerative or otherwise, existed previous to the development of cancer. From his figures Mayo concludes that under present conditions the patient who is submitted to exploration with a probable

diagnosis of cancer of the stomach has a little over one chance in three of a radical operation.

In discussing the operation Mayo states that when the primary disease is readily removable, but the associated and involved lymph glands are not, he removes the tumour, as it gives the patient a longer period of comfort. Moderate involvement of the pancreas is not a bar to successful removal. In over 8 per cent. of the 378 resections a portion of the pancreas was removed and the duodenal stump implanted into the hollow left. Leakage has not occurred, and the results of the procedure have been excellent. Enlarged lymph glands are found in a high percentage of cases, but they are not always malignant. The method of resection usually employed is that known as Billroth II., *i.e.*, closure of the gastric and duodenal stumps with an independent gastro-jejunostomy, usually posterior. A two-stage operation is not favoured. In cases of inoperable pyloric cancer Mayo prefers an anterior to a posterior gastro-jejunostomy, as involving less manipulation. In some cases jejunostomy alone is valuable when gastro-jejunostomy is impossible. In estimating the results Mayo puts the mortality of the radical operation at 10 per cent. In early cases with the patient in good condition the mortality will be less than 5 per cent. There is a prospect of a five-year cure in about 25 per cent. and a three-year cure in 38 per cent. of those recovering from a radical operation. Few patients fail to get more than one year of relief.

Ligation of the Ileo-colic Vein in Suppurative Thrombo-phlebitis following Appendicitis.

In a communication to the Society of Surgeons in Saxony, Braun (*Zentralbl. f. Chir.*, No. 35, 1913) proposed ligation of the ileo-colic vein as a remedial measure in cases of suppurative phlebitis following appendicitis. In 600 cases of appendicitis he had met with suppurative phlebitis eight times. Four of these cases followed the usual course, with rigors, enlargement of the liver, and jaundice, and all succumbed rapidly. On examination of the specimens obtained after death it was found that the ileo-colic vein was the only path by which the infection had travelled from the infected area. Hence arose the idea that tying this vein close to its opening into the superior mesenteric vein might arrest the progress of the disease. The operation is not difficult to carry out, for if the ascending meso-colon and the peritoneum internal to it are well exposed, the vein can be seen shining through the peritoneum, and if thrombosed can be felt as a solid cord. On incising the peritoneum over it the vein can be easily isolated and ligated. Braun has had occasion to do the operation twice, in one case removing a piece of vein 8 cm. long filled with purulent thrombus, near which there were two abscesses. Both patients recovered. Braun suggests that ligation of the vein should be done as soon as symptoms of portal pyæmia make

their appearance. The idea is not a new one, as Wilms suggested and carried out a similar operation some time ago. His plan was to ligate the radicles of the vein near the intestine, a measure more likely to interfere with the vitality of the gut than Braun's method.

Snapping Hip.

Binnie (*Ann. Surg.*, July 1913) records 2 cases of snapping hip with a review of 41 cases which he has collected from various sources. One of his own cases developed the condition after a trauma, while the other patient acquired it as the result of having successfully learned to imitate a companion who was able voluntarily to make the characteristic snapping noise by moving his hip in a particular way. Of the 41 cases collected 16 were due to trauma, while 10 were either due to practice or some congenital defect, and in the others no cause was mentioned. Seventeen cases were associated with disability, in 12 there was none. Binnie discusses the view that the snap is caused by the ilio-tibial band slipping on and off the great trochanter, and, as the result of his own observations with his study of the recorded cases, rejects it in favour of the view that it is the anterior portion of the gluteus maximus which is the structure at fault. The strongest evidence in favour of this view is the fact that an operation which fixes the anterior portion of the gluteus maximus to the great trochanter and the vastus externus is successful in curing the condition. In addition, careful examination of the cases before and at operation will show that the prominent band, which can be seen, felt, and heard slipping over the trochanter, is behind the ilio-tibial band. J. W. S.

OBSTETRICS AND GYNECOLOGY.

UNDER THE CHARGE OF

A. H. F. BARBOUR, M.D., AND J. W. BALLANTYNE, M.D.

Blood Tests, especially Abderhalden's, in Pregnancy.

About three years ago (*vide Edin. Med. Journ.*, September 1910, p. 249) reference was made to the work of Fieux and Mauriac in the serum-diagnosis of pregnancy, and the hope was expressed that obstetricians were not far from the possession of a reliable blood test for pregnancy in the early months, when, of course, certain signs are wanting. Since then a great deal of work has been done on the subject of a blood test for this condition, and the literature which has gathered round Abderhalden's investigations in particular has already become extensive. Abderhalden himself, either alone or working with others, has published over twenty articles on what has come to be called Abderhalden's biological test for pregnancy; and other writers, such as Behne, Ekler, Engelhorn, Epstein, Fauser, Frank, Franz, Freund,

Heiman, Henkel, Lindig, M'Cord, Oppenheimer, Petri, Ruhemann, Schlimpert, Schwarz, Veit, and P. F. Williams, have dealt appreciatively or critically with the matter. Indeed attention may be said to be focussed at the present time upon the reliability and practicability of Abderhalden's test: other tests have rather been put on one side. Thus the precipitin method, deviation of the complement (making use of various antigens, such as powdered placental substance, extract of corpus luteum, etc.), the anaphylactic reaction, a modification of Wassermann's reaction, the meiostagmin reaction (*vide Edin. Med. Journ.*, January 1913, p. 67), and diagnosis by leucocytosis have all been found to be unreliable; so also the antitryptic power of the pregnant serum, the lipoid reaction, and the cobra venom reaction in pregnancy have not fully justified the hopes placed upon them. At the same time the search after a test has been of service in opening up new regions of the physiology and pathology of pregnancy, and in preparing the way for a full understanding of the complex and wonderful relationship between mother and unborn infant, which some have called a harmonious symbiosis, others a prejudicial parasitism, and others an immunity reaction. Whether we shall have in the Abderhalden biological test a certain, an easily practicable, and a universally applicable indication of pregnancy remains to be seen, but in the meantime many workers are making experiment upon it.

It may be well to take note of some recent papers on the subject, and reference may be made to Decio's article (*Annal. di ostet. e ginec.*, i. for 1913, pp. 198-205), to Bernhard Aschner's (*Berl. klin. Woch.* for 7th July 1913, p. 1243), to Parsamow's (*Zentralbl. f. Gynek.*, 1913, vol. xxxvii. p. 934), to Jellinghaus and Losee's experiments (*Bull. Lying-in Hosp. City of New York*, June 1913, vol. ix. pp. 67-96), and to Leith Murray's work on the immunology of pregnancy (*Journ. Obstet. and Gynec. Brit. Empire*, February 1913, vol. xxiii. pp. 87-108). But, first, a few words are necessary to explain the principle upon which Abderhalden's work rests.

Stated very briefly, the basis of the whole procedure is the assumption that if substances foreign to the blood enter into the circulation, other substances (we may call them protective ferments) form in the blood-plasma which break up the former into harmless things, and that thus the organism protects itself against foreign materials. This alters our view of digestion, for whilst von Bunge believed that inorganic food-stuffs were absorbed only in the form in which they were found in the food, Abderhalden maintains that the business of digestion is not only to change undialysable proteins into dialysable ones, but also completely to reduce the various food-stuffs by ferments. He holds, therefore, that in digestion there is a disintegration process for food of a foreign species into many kinds of what he terms "*Bausteine*" (building-stones, we may say, or, more idiomatically, "free-stones"),

and so to prevent substances foreign to the blood from entering it: but there is no absolute proof that all this breaking up into "*Bausteine*" takes place in the intestinal tract. Now the long series of researches of Abderhalden and his co-workers show that after the intra-venous or subcutaneous injection of substances foreign to the organism (such as albumen, peptone, lactose, etc.), the blood-serum of the animal thus treated acquires the power of dealing with the injected substances. So it has to be granted now that there is a true digestion going on in such cases outside the gastro-intestinal canal (parenteric) by means of which substances foreign to the organism have their specificity taken away, and are split up into elementary groups or into separate constituent parts—the "*Bausteine*" of Abderhalden, the "*singole pietre costituve*" of Decio.

The next step in the process of experimental work has been the demonstration that the blood-serum is capable of dealing in this way with substances which are normal constituents of the body ("native" to it, as it were), but which do not normally find their way into the blood-current. Abderhalden took kidney tissue of a dog and introduced it into the circulation of another animal of the same species. He found that the proteins of the kidney were split up by ferments in the dog's blood-serum which they themselves had produced or "mobilised," to use the technical term, for when some of the dog's serum was mixed with kidney tissue in a polariscope tube, rotation occurred. Thus, greatly abbreviating the whole argument, it follows that substances which are "native" to the body may be foreign to the blood, for when put into the circulating blood they "mobilise" ferments which cause their splitting up.

From these facts emerges the biological test for pregnancy. During gestation there pass over into the blood-stream of the mother placental (chorionic) elements which, although they come from an organism of the same species, must be considered as foreign to the new environment. If this be so they ought therefore to cause the formation in the maternal blood of ferments capable of dealing with them, of breaking them up into their constituents, and of making them innocuous and capable of being assimilated by the mother's organism. Abderhalden claims that this really takes place, and that there is in the serum of the pregnant woman from the first months up to the fourteenth day of the puerperium a group of ferments capable of breaking up placental albumen and peptone, in a word proteolytic and peptolytic ferments. Further, the formation of the disintegration products may be made evident in two ways—either by the polariscope or by means of dialysation. Thus have been obtained the two tests with which Abderhalden's name has been associated—the *optic* method and the *dialysation* method.

Very few observers have worked much with the optic test, for it is

difficult and requires placental peptone, a substance which takes a long time to make. Jellinghaus and Losee, however, describe it as follows: —From the blood of the woman who is suspected of being pregnant there is taken 1 c.c., which is tested with 1 c.c. of a 5 per cent. solution of placental peptone in 0·9 per cent. salt solution. This is placed in a polariscope tube holding exactly 2 c.c., and the tube is surrounded by a water-bath at 37° C. The initial rotation is read, and the tube is placed in the incubator at 37° C. and taken out at intervals of two hours and later of four hours for a period of forty-eight hours, and the change in rotation is noted. A change of 0·05 or more is considered as significant of the presence of the ferment and as positive of a diagnosis of pregnancy.

The dialysation method is simpler, but even it is full of fine detail, and requires extreme care and scrupulous exactness. Abderhalden himself does not now trust to his original technique. First the placental albumen has to be prepared, and for this purpose fresh placenta from a healthy woman has to be taken, and must be washed absolutely free from blood (a very important point). The pieces of tissue are then to be taken and boiled in 2 litres of water with 2 drops of glacial acetic acid for 5 minutes: this is done over and over again until the water which is poured off is negative to the biuret reaction. Abderhalden has come to lay a strong emphasis on this part of the process, and is much more exact in his instructions than formerly: further, he uses in place of the biuret reaction the *ninhydrin* one. Ninhydrin or triketohydrindenhydrate is a salt which forms a colourless solution with water, which when mixed with a solution containing peptone or alpha-amino acids yields a violet tinge (positive reaction): in the absence of these things, as well as of albumen and polypeptids, it remains colourless (negative reaction). The biuret reaction only indicates the peptone, whilst the ninhydrin reveals also the alpha-amino acids: the latter is therefore to be preferred, for in the dialyser, as we shall see, the peptone formed changes rapidly into amino acids. When the placental albumen has thus been prepared and made free from all dialysable substances, one gramme of it is put in a dialyser (a fish-bladder condom or a Schleicher and Schuell dialyser): 1·5 c.c. of blood-serum from a vein in the arm is added and 2 drops of toluol. The dialyser is then placed in a container (a glass test-tube large enough to contain the dialyser and leave a space of $\frac{1}{4}$ cm. between), covered with a layer of toluol, and incubated at 37·5° C. for 16 hours. Then the dialyser is removed from the container and 10 c.c. of the dialysate (free from toluol) is put in a small beaker and has 0·2 of a 1 per cent. solution of ninhydrin added. Finally the mixture is boiled for thirty minutes and the colour noted, when a clear or yellow colour is regarded as negative and a violet or purple colour as a positive reaction. The positive reaction means that the placental albumen has been dealt with by ferments (proteolytic and

peptolytic), which have broken it up into peptone and alpha-amino acids, and that these have dialysed through and are detected by the ninhydrin. Let it be repeated that the foregoing is only a sketch of the plan of procedure, which is really much more complex, and has to be hedged in by the most minute precautions; further, in every case there must be controls.

Decio (*loc. cit.*) tested the Abderhalden reaction in eighteen women (early and late pregnancies, abortions, eighth day of puerperium) and found it positive in them all; it was always absent in non-pregnant women and in men. He concluded, therefore, that there were ferments in the blood of the pregnant woman which digested placental albumen, and that these were not found apart from pregnancy. Decio is further of the opinion that through this reaction we may discover much about the manifestations of pregnancy, both normal and pathological (*e.g.*, the activity of the mammary glands, and the possible anaphylactic nature of eclampsia). He sought to determine whether the serum in pregnancy had a similar effect upon hepatic, ovarian, thyroid, and suprarenal albumen, but always obtained negative results. A very valuable suggestion is the investigation of other states (*e.g.*, some diseases, such as epilepsy, Basedow's disease, Quincke's disease, and osteomalacia) by similar methods. Thus he found that the serum of two patients suffering from osteomalacia (the one pregnant and the other not) gave evident signs of being able to digest ovarian albumen, but on a second experiment only that of the pregnant patient gave the reaction.

Bernhard Aschner (*loc. cit.*) has also worked at this subject, dealing more particularly with the question of the specific nature of Abderhalden's reaction. Forty-five women in the second half of pregnancy all gave a positive reaction, but a patient with pregnancy kidney and another with syphilis showed a weaker reaction than the rest. There were sixteen patients in the first half of pregnancy, and fourteen of these women gave a positive reaction; one, a gestation of from four to six weeks, gave a negative result: and a five months' pregnancy in a woman with marked adiposity was also negative. In addition to these cases Aschner records three in which the fœtus was dead *in utero*; they gave a negative reaction. There was also a case of hydatidiform mole and two of ectopic pregnancy, in all of which the reaction was positive; and there were eight eclampsias reacting positively too. Twelve controls (women with no disease of the reproductive organs) gave with one exception (a case with a Wassermann reaction) negative results. The conclusion therefore is that pregnancy with a living fœtus or with living placental tissue has almost without exception a positive reaction, and that quite healthy normal (non-pregnant) women react negatively. Aschner, however, found no such certain rule when he came to gynecological conditions; for carcinoma of the uterus, climacteric hæmorrhages, climacteric amenorrhœas, chlorosis with

amenorrhœa in the young, and inflammation of the uterine annexa were states in which now a positive and again a negative reaction was obtained. Four cases of uterine myomata, however, reacted negatively. One must therefore expect some failures with Abderhalden's test, just as there are some with Wassermann's for syphilis: but it has nevertheless a great value in diagnosis.

Parsamow (*loc. cit.*), from 116 observations (of which only 16, however, were with the more precise later technique of Abderhalden), found that several gynecological states (myoma, pyosalpinx, cystoma, etc.), gave a positive reaction as often as a negative one: practically all the pregnancies, however, gave a positive reaction.

The article by Jellinghaus and Losee (*loc. cit.*) forms a very careful and critical examination into the method of performing Abderhalden's test and into the results obtained by these two observers and by others. They tested 563 sera from pregnant and non-pregnant persons (370 of the former and 193 of the latter), and it is particularly important to note that these grouped themselves into six series, and that each series of tests was made under more rigorous conditions of strictness than the preceding series. The result was that the percentage of negative reactions with the pregnant sera and the percentage of positive reactions with the non-pregnant ones both reached a minimum in the sixth and most carefully-conducted series. Thus in the sixth series of 89 pregnant sera and 49 non-pregnant the proportion of negative reactions with the former was only 5·5 per cent. and of positive reactions with the latter 8 per cent. Jellinghaus and Losee are very careful not to deduce too much from their results and from those of others, but they favour the opinion that it is possible by the dialysation method to distinguish between the healthy pregnant and the healthy non-pregnant woman. A case is to be regarded as one of pregnancy when the test gives a positive ninhydrin reaction and the controls a negative one, or even when the test gives a positive ninhydrin reaction and the controls also, but of a lighter shade than the test itself. At the same time the last word of these workers is to emphasise the difficulty of carrying out the test without technical errors or fallacies in one part or other. At present it is essentially a laboratory test and not one to be done by the general practitioner.

It is perhaps premature to consider what advantages may flow from the discovery of a reliable blood test for pregnancy, but one may think, for instance, of its importance in the diagnosis of early pregnancy, especially when the woman is unmarried; of its usefulness in distinguishing between myomata and gestation; in separating amenorrhœas due to lactation, tuberculosis, diabetes, etc., from those caused by pregnancy; and in diagnosing chorio-epitheliomata, perhaps; and of its possible value in throwing light upon some of the diseases of pregnancy, and especially upon eclampsia. J. W. B.

PATHOLOGY.

UNDER THE CHARGE OF

THEODORE SHENNAN, M.D., AND JAS. MILLER, M.D.

The Control of Infectious Diseases by Protective Inoculation.

Under the above heading His contributes an article to the *Journal of Medical Research*, July 1913. He has endeavoured to treat infective diseases (to use his own words) "by aiding the leucocytes by furnishing them as directly as possible with the weapons which are being taken from them in the fight with invading micro-organisms, and to protect them thus from destruction, and give them an opportunity to recuperate and carry on successfully their struggle against the invading germs." He assumes that these substances exist in the leucocytes and in extracts made from them. These extracts are obtained as follows:— Aleuronat is injected into the pleural cavity of rabbits. It is first mixed with a solution of starch in meat extract, boiled for 5 minutes, filled into tubes, and finally sterilised in the autoclave. Twenty-four hours after the injection a copious exudate, very rich in leucocytes, will be found in the pleural cavity. This is removed with proper precautions and filled into sterile centrifuge tubes. Immediate centrifugalisation is carried out to avoid clotting, and after decanting the supernatant fluid the sediment which contains the leucocytes is added to sterile distilled water and beaten up with a spatula. More distilled water is added, and, after ascertaining that the fluid is sterile, it is placed for 7 or 8 hours in the incubator at 37° C. The tubes are then placed in a refrigerator, and kept there until used. Before use the tube is well shaken.

The author's experiments in controlling and curing infective conditions by means of these extracts have now extended over five and a half years.

In the first place the author details some of his experimental work with animals. He infected rabbits with staphylococci, streptococci, and a number of other germs intravenously, and then inoculated the animals subcutaneously or intraperitoneally with his leucocyte extract. Almost invariably the effect was to prolong life, and in some cases to prevent the death of the animal altogether when a fatal dose of the organism had been injected. This curative effect was particularly marked in the case of infection with the typhoid bacillus and the meningococcus. The substance acted very rapidly, a fall of temperature being observed a few hours after the administration of the extract. This fact the author considers negatives the view that the extracts act by stimulating leucocytosis.

A number of cases of disease in the human subject were also

treated. These included infections due to the meningococcus, the pneumococcus, streptococci, and staphylococci.

In the meningococcal cases, almost without exception, improvement followed inoculation. In all, 22 cases were treated, with a percentage of recovery of 64. In 7 cases in which treatment was begun on the seventh day of the disease, although several of these cases were severe, recovery without sequelæ occurred in all.

Fifty-three cases of lobar pneumonia were treated with leucocyte extract. Out of this number three died. The author considers the results as very satisfactory, because in a majority of cases the injections of extract were not given until the patients were gravely ill. There was observed an almost immediate improvement in the general condition of the patient, along with a sudden drop in the temperature. The effect upon the blood was to cause an increase in the number of circulating leucocytes. The doses given were, as a rule, 20 to 60 cubic centimetres, repeated every 4 hours until improvement occurred.

As regards streptococcic infections, 148 cases of erysipelas of all types and grades were treated with leucocyte extract. With the exception of a few cases the lesions had been present for a time, varying from several days to two weeks before treatment was begun. The results obtained were, according to the author, uniformly good. In every case there was a marked reaction following the use of the leucocyte extract, manifested by a fall in the temperature and a rapid improvement in the general condition. In practically all the cases the symptoms disappeared within a few hours of the first injection. This improvement was most marked in the cases treated early in the course of the disease. The effect upon the lesion was to produce an alteration in colour to a brighter red, and then gradual fading of the colour. The average duration of the case after treatment was begun was 3·18 days. The mortality was only 3·39 per cent., the deaths occurring entirely in children under 1 year old. Similar favourable results were also obtained in cases of staphylococcic infection.

The method was tried by Dr. Adrian Lambert in his wards at the Bellevue Hospital on about 50 cases of erysipelas. His report was "that leucocyte extract will abort infections which are treated with the extract within 48 hours. It will ameliorate the course of older infections and may abruptly terminate them; the longer the infection has existed the less likely is the latter to take place, but it tends to shorten the course of the case."

Dr. Dwyer has treated a series of 35 cases, and obtained practically the same results.

Although the above report appears to the reader as being somewhat too roseate, it would seem that the method is worth trying, especially in cases of streptococcic infection. There is apparently no great difficulty in preparing the material for injection.

Complement-Fixation in Syphilis with Treponema Antigens.

In the same number of the same journal appear several papers upon matters relating to the complement-deviation test. One of these by Kolmer, Williams, and Laubaugh, from the Laboratory of Experimental Pathology, University of Pennsylvania, deals with complement-fixation in syphilis where the antigen used is an extract of the specific organism itself. It is generally admitted by authorities, including Wassermann himself, that, although extracts from human heart and healthy rabbit's liver and chemical substances such as lecithin give reliable results when used as antigens in the syphilis reaction, yet the extract obtained from the liver of a syphilitic fœtus gives the best results. This may be supposed to be due to the fact that, in addition to the non-specific lipoids of the organ, specific bodies obtained from the spirochætes are also present. It is interesting to find that the results obtained by using antigens prepared from the treponema pallidum itself do not bear this out.

The authors carried out their experiments as follows:—The treponema pallidum was grown anaerobically in large tubes of ascitic fluid and kidney broth for periods varying from 4 to 6 weeks. At the end of this time good rich growths were secured. Some of the culture medium was then removed and centrifugalised. The sedimented spirochætes were then shaken with sterile salt solution and again centrifugalised. The washed organisms were then suspended in sterile salt solution and 0·4 per cent. phenol added. This formed one type of antigen. An antigen was also prepared by extracting the organisms with alcohol.

Two hundred and eighty-nine sera in all were tested. These were obtained from (1) 86 persons giving a positive Wassermann reaction; (2) 79 persons giving a negative reaction: (3) 4 sera of normal persons; (4) sera from 8 rabbits immunised with intravenous injections of broth cultures of treponema pallidum; (5) sera from 110 normal rabbits; (6) sera from rabbits immunised by bacillus typhosus and spirillum choleræ. In every case the amount of fixation with the treponema antigens was compared with the stock laboratory antigens, viz. (1) alcoholic extract of syphilitic liver; (2) acetone extract of syphilitic liver; (3) cholesterinised alcoholic extract of bovine heart; (4) acetone-insoluble lipoids of bovine heart (Noguchi).

The experiments with syphilitic sera showed (1) in all instances a less degree of fixation with pallidum antigens than with the stock antigens; (2) of 85 sera from all stages of the disease in which there were positive reactions with the stock antigens, 42 yielded negative reactions with the pallidum antigens; (3) in one case only was the reaction positive with the pallidum antigen when it was negative with the stock antigens; (4) sera of rabbits immunised with pure cultures

of the treponema pallidum give marked complement-fixation with pallidum antigens; (5) on the other hand, in the case of normal rabbits, no fixation was observed with pallidum antigens; (6) the sera of the immunised animals fixed complement with antigens of typhoid and cholera organisms; (7) the fixation was, however, not observed with the sera from human cases of syphilis.

In view of the above results some recent experimental work carried out in Germany is interesting. Bitter (*Münch. med. Woch.*, 1913, No. 33, S. 1820) has used an antigen prepared from tuberculous livers of guinea-pigs and bovines, and found his results compared favourably with results obtained with the syphilitic liver antigens, and were superior to those obtained with normal organ extracts.

Munck (*Deutsch. med. Woch.*, 1912, S. 891), working on similar lines, prepared useful antigens by extracting the livers of mice which had been infected with the spirochæte of relapsing fever. It would seem therefore that the most efficient antigens are those in which the lipoid element of the normal organ extract is reinforced with some specific element obtained from a micro-organism.

The Wassermann Reaction with Normal Rabbit Serum.

In connection with the above another paper which appears in the *Journal of Medical Research* is of interest. The sera of 117 normal rabbits were tested against the stock laboratory Wassermann antigens, also against extracts of treponema pallidum. It was found that a certain percentage of these sera yielded positive complement-fixation reaction with the lipoidal antigens but not with the pallidum antigens. An alcoholic extract of bovine heart reinforced with cholesterin showed the highest percentage of positive reactions.

These results are interesting in relation to the occurrence, in a large number of healthy rabbits' serum, of complement-deviation with a *tubercle* antigen such as old tuberculin. J. M.

NEW BOOKS.

The Interpretation of Dreams. By Professor Dr. Sigmund Freud, LL.D. Translated by A. A. Brill, Ph.B., M.D. Pp. xii. + 510. London: George Allen & Co., Ltd. 1913. Price 15s. net.

Dreams and Myths: A Study in Race Psychology. By Dr. Karl Abraham. Translated by William A. White, M.D. Pp. vi. + 74. New York: The Journal of Nervous and Mental Disease Publishing Co. 1913. Price $1.

Freud's Theories of the Neuroses. By Dr. Edward Hitschmann. Translated by Dr. C. R. Payne. Pp. x. + 154. New York: The

Journal of Nervous and Mental Disease Publishing Co. 1913. Price $2.

Papers on Psycho-Analysis. By ERNEST JONES, M.D. Pp. xvi. + 432. London: Baillière, Tindall & Cox. 1913. Price 10s. 6d. net.

THE system of pyschology which is associated with the name of Professor Freud is steadily gaining adherents. This is not the place, nor, probably, has the time yet arrived, to attempt any critical exposition of its leading features, still less to dogmatise as to its claims to be considered a complete theory of the working of the mind. As an hypothesis it has had to contend against the innate aversion of civilised mankind to the open discussion of sexual matters, and Freud's ascription of neuroses to the workings of the sexual instinct is unquestionably repugnant to many. There is, however, this much to be said: if, as biologists teach, the two primary instincts are those which subserve, first, the preservation of the individual, and, second, the perpetuation of the race: if, moreover, nature takes more thought for the species than for the individual, the instinct towards reproduction, and all that it implies, ought to be at the bottom of half of man's feelings, hopes, and desires. For Freud, sex means a great part of life; "sexual" has a connotation wider than in our own tongue: the affection of the child, the fancies of a maid, the loves of men and women, many religious cults, many forms of devoted social service, are primarily dependent on this great question of sex. It is well to make this clear, and to say that although Professor Freud speaks with the utmost frankness on these subjects, his pages are not disfigured by the egotistic revelations of hypochondriacs and perverts as are those of too many books on sexual pathology; readers should also bear in mind the difference between the German and English standpoint as to what constitutes "morals."

The fact about Freud's psychology which makes it so attractive as an hypothesis is the wideness of its bearings. Few except professed psychologists are competent to judge of it as a whole, but everyone who reads, almost, will now and again find that in departments of medicine, or of general literature, or of anthropology with which he may happen to be specially familiar, Freud's pages contain most illuminating suggestions and explanations. Take at random his insistence on the very early manifestations of the sexual instinct in children. This is one of his views which has repelled many, yet those who have had experience of the series of curious habits which are met with in childhood must realise that Freud's researches throw a great deal of light on this period of life. It seems to the present writer a strong testimony to the real value of Freud's work that it has so many different bearings. An hypothesis which explains many of the facts of dream life, which explains, and may be successfully applied in the treatment of, hysteria and neuroses, which fits in with many of the experiences of

daily life, and which can be utilised in the interpretation of myths and sagas, the expressions of the psychology of a race, is *prima facie* worthy of attention. Its interpreters may go too far at times—no doubt they do: but it is only by thus testing the validity of the hypothesis in many directions that its truth or falsity can be proved: at present the trend of evidence is that in Freud's work we shall find a true theory of psychology.

The Interpretation of Dreams, from the third German edition of which this translation has been made, is one of Freud's most important works: it is of interest not only to the medical but also to the general reader. It forms one of the best introductions to a study of what is really an extremely difficult subject, and gives an insight into the psycho-analytic method. One cannot but feel grateful that Freud has found such an admirable translator as Dr. Brill. The original is as difficult German as is anywhere to be met with, and Dr. Brill has rendered it into English which is as lucid as the obscurity of the matter allows. In less competent hands an English translation might easily have been almost incomprehensible.

Dreams and Myths is an application of Freud's teachings to comparative mythology. Certain legends are the common property of mankind: their root-ideas exist in all tongues and among all races. They may appeal almost as powerfully to the twentieth century mind as to the people amongst whom they originated. Myths of this kind are, as it were, racial dreams, and may be interpreted in the light of the latter. The tragedy of Œdipus is one of those which has been most thoroughly studied from this point of view, the Freudian doctrine being that the fable expresses the infantile jealousy of son toward father—an early sexual sentiment of considerable importance in Freud's teaching. Dr. Abraham extends the psychological study to several other fables—the Prometheus myth, for example. In reading this book it is well to remember that in the German educational system the study of mythology fills an important place, and that the average German is filled with surprise at the educated Englishman's ignorance of the subject.

As its name implies, *Freud's Theories of the Neuroses* is a general survey of the more strictly medical applications of the psychology. It is in every way excellent, and here also the translator deserves congratulation no less than the author, who has succeeded in giving a sufficiently clear epitome of a body of doctrine which is still in a very fluid state. Dr. Hitschmann also refers to the later developments of Freud's teaching, and its bearing on the evolution of language, literature, art, and belief. There is an introductory preface by Dr. Ernest Jones.

The material of Dr. Ernest Jones' *Papers on Psycho-Analysis* has already appeared in the form of contributions to current journals, for the most part psychological. In their present form these will be

much more readily accesible than heretofore. The articles fall under five heads: General, Clinical, on Treatment, on Dreams, on Education, and they show Dr. Jones as an earnest student and thorough-going follower of Freud. In his preface he very aptly states the view of Freud's work which we have endeavoured to express: "The great criterion of the importance of a scientific generalisation is its fertility"; and ". . . the psycho-analytic theory has . . . received confirmation from, and supplied fruitful stimuli to, the mental science cognate to psychology, to philology, folk-lore, mythology, criminology, jurisprudence, anthropology, and sociology."

It is eminently a matter for congratulation that Freud's work is now becoming accessible to English readers, because to understand him in the original requires a knowledge of German quite above the average.

Diseases of Children. By Various Authors. Edited by Archibald E. Garrod, D.M., M.A., F.R.C.P., F.R.S.; Frederick E. Batten, M.D., M.A., F.R.C.P.; and Hugh Thursfield, D.M., M.A., F.R.C.P. Pp. xvi. + 1185. London: Edward Arnold. 1913. Price 30s. net.

This volume is the result of the combined labours of a number of London pediatrists, for with two exceptions the contributors are practitioners connected with the various hospitals for sick children in London.

A comprehensive encyclopedic book of this description has much to recommend it as a work of reference, as the writers of the various sections have presumably been chosen on account of their special knowledge, or because they have paid peculiar attention to the conditions of which they treat.

On the other hand, collaboration often leads to a disproportion in the importance attached to the different sections. Thus we find that the space allotted to such an outstanding subject in children as the infectious diseases is only double that which is allowed to the article on the diseases of the skin, and while congenital syphilis and tuberculosis are disposed of in twenty pages, nearly the same amount of space is occupied with a description of the diseases of the muscles. The opening chapters, which are grouped under the somewhat unfamiliar heading of "Prolegomena," are devoted to a consideration of heredity, immunity, vaccines, and infant feeding.

Cantley, who is responsible for the section on infant feeding, gives a fair résumé of the subject, but it is more a critical digest than a pronouncement of his own personal opinion. It seems to us that he denounces far too mildly the habit of rearing infants on proprietary foods, all of which are unsuitable for the needs of the growing child.

The diseases of nutrition, rickets, atrophy, and scurvy are dealt

with by the same writer. In discussing the differential diagnosis of atrophy he makes no reference to the importance of excluding cases of congenital syphilis and empyema in infants, which ought always to be taken into account before arriving at a definite conclusion.

Still contributes an article on some forms of œdema in childhood, and enumerates the various conditions with which this phenomenon is associated. Robert Hutchison writes on the diseases of the alimentary system in his own crisp, convincing, and somewhat dogmatic style. This is one of the most valuable sections of the book, and strikes the reader as being written entirely from the standpoint of personal experience. The chapters on chronic indigestion, cœliac disease, and congenital pyloric stenosis are models of medical writing, containing in a brief space a clear and concise description of those conditions, together with practical common-sense indications for treatment. He is strongly opposed to operative treatment in cases of pyloric stenosis, and is led to this opinion by having treated medically twenty cases with seventeen recoveries, which must surely be an exceptionally fortunate experience.

Diseases of the respiratory system are entrusted to the able hands of G. A. Sutherland, who condenses in the space at his disposal an amount of valuable instruction. The clinical pictures which he draws of broncho-pneumonia and empyema leave little to be desired, and special attention is devoted to the treatment of these diseases. In the treatment of empyema he advocates the resection of a rib in all cases as giving the best results and being in all respects most suitable. The short article by John Thomson on congenital mental defect in childhood is written with all the care and accuracy which are characteristic of this writer's work. Garrod contributes two interesting chapters on the ductless glands and the diseases of metabolism, and embodies in them his views of those subjects, with which many of us are familiar from his previously-published papers.

J. S. Fowler covers the field of the affections of the genito-urinary system in a very comprehensive article which includes malformations of the bladder and genital organs. The chapter on the bacterial infections of the urinary tract is a most instructive one, and he gives a full and interesting résumé of the latest views on this subject.

We welcome the book as a valuable addition to the rapidly-increasing literature on pediatrics, and congratulate the editors on the completion of an excellent work of reference.

It is most carefully edited, well printed, and in parts admirably illustrated.

Probably in a future edition the illustrations will be materially increased, but as this will add considerably to the size of an already somewhat bulky and ponderous book, it would be an advantage to publish it in two volumes.

Headache: its Varieties, their Nature, Recognition, and Treatment. By Dr. Siegmund Auerbach, Chief of the Polyclinic for Nervous Diseases in Frankfurt a/M. Translated by Ernest Playfair, M.B., M.R.C.P. London: Henry Frowde. 1913. 5s. net.

The subject of headache is one which interests every medical practitioner. No doubt it is true that many persons are in the enviable position of never having had a headache, yet we do not think these constitute the majority, at least in civilised life; and the symptom—for it is oftener this than an independent disease—is one for which the help of the physician is frequently invoked.

The work before us, written by an eminent German neurologist, sets out with a classification of the different forms of headache under four varieties—(1) The more independent forms of headache, under which are included migraine, neurasthenic headache, and nodular (rheumatic) headache. (2) Headache associated with disease of individual organs, such as in brain disease, disorders of special senses, digestive and kidney disease. (3) Headache in general (infectious and constitutional) diseases. (4) Combinations of these different forms.

Migraine, which occupies a large space in the book, is described in its various manifestations, and special emphasis is laid upon the hereditary nature of the disease. This fact, and that of the commencement of the ailment in childhood or adolescence, is dwelt upon as of significance in the matter of differential diagnosis. In discussing the various views held as to the pathology of migraine the author seems to favour the theory of "a disproportion between the cranial cavity and the cranial content. . . . The symptom-complex of migraine can most plausibly be explained if we assume that the predisposition depends upon a disproportion between the cranial capacity and brain volume, and that the attacks are brought on by exciting causes which, through the action of the vasomotor mechanism, are calculated to exaggerate this predisposition."

Neither this nor any of the other views referred to do much to lift the pathogenesis of this malady out of the region of conjecture. Nor is there anything new put forth on the subject of treatment. Another large part of the book is devoted to an account of what Dr. Auerbach calls nodular (rheumatic) headache, a condition which has been hitherto but little recognised or described, and has apparently been included under migraine or some of the other varieties of head pain. The author represents this form of headache as most commonly occurring in women of middle or advanced age, and not hereditary like migraine, from which also it differs in its persistency. Associated with this form are nodules, usually of small size, in the subcutaneous tissue of the scalp and in the occipital fascia and fasciæ at the nape of the neck, which are very tender to the touch, although, apart from this, the patients are usually not conscious of their existence. Dr.

Auerbach suggests that these nodules may be circumscribed dilatations of lymphatic vessels with stagnant inspissated lymph, dependent upon some circulatory disturbance, and that they may be produced by local cold from evaporation, as in people who perspire freely about the head, also in women after washing their heads without adequate and rapid drying afterwards. Hot poultices and massage are usually sufficient for a cure. We are inclined to doubt whether this variety of headache is at all of such frequent occurrence as our author believes.

Headaches due to brain disease, to disorders of the special senses, of the digestive organs, of the kidneys, etc., are described in a lucid manner, although rather too briefly, since this part of the book is perhaps the most valuable.

On the whole, while it cannot be said that much that is new will be found in this work, the subject is handled in an interesting manner, and the translation by Dr. Playfair is excellent.

Studies in Smallpox and Vaccination. By WILLIAM HANNA, M.A., M.D., D.P.H. Pp. 52. Bristol: John Wright & Sons, Ltd. 1913. Price 7s. 6d. net.

MANY might be inclined to consider that all that is possible has already been said on the question of vaccination and its value in smallpox prophylaxis. But these studies of 1163 cases of smallpox, observed in Liverpool by Dr. Hanna, not only form a valuable confirmation of observations previously made, but also bring out several fresh points of interest. The material available, including 943 cases vaccinated in infancy and 220 unvaccinated, is sufficiently large to afford convincing statistical tables, and the author has produced some most interesting charts showing the type of disease and its mortality at the different age-periods among the vaccinated and unvaccinated respectively. It may be noted that no deaths occurred in the vaccinated group below the age of 20, and that, as regards type, there was not a single severe case under that age. The unvaccinated group, on the other hand, shows a case mortality of 57 per cent. below 2 years of age, of 30 per cent. between 2 and 5 years, and of 20 per cent. between 5 and 10 years. The interesting observation is made that the period between 10 and 15 years appears to be the least dangerous, even the unvaccinated among Dr. Hanna's patients only showing a case mortality of 5 per cent. at that time of life. Thereafter their mortality rises steadily until, over the age of 40 years, it reaches almost the level it maintained in infants. Dr. Hanna also gives tables showing how the severity of the type of disease varies inversely with the size of the scar area left by infantile vaccination. From an examination of the scar area of 368 persons who have never had smallpox, taken from the general population, the striking result emerges that at all age-periods

it averaged distinctly larger than that in vaccinated persons who contracted smallpox. This certainly seems a strong point in favour of the argument that large areas afford better protection.

The last part of the book discusses the interaction of concurrent variola and vaccinia. Dr. Hanna has tabulated the result of vaccination in 75 infected persons. Successful vaccination was possible up to the day of actual onset of symptoms. Vaccinations performed after that date failed to take. It would appear to be always worth while to vaccinate with a view of modifying the course of the illness, even if too late to prevent it.

A series of most admirable illustrations, which have the merit of demonstrating clearly what they are intended to show, adds much to the value of the book. Indeed, while the public health official will find the text a necessity, the general practitioner might do well to purchase the book for its illustrations alone.

The Bacterial Diseases of Respiration, and Vaccines on their Treatment. By R. W. Allen, M.D., B.S. Pp. x. + 236. London: H. K. Lewis. 1913. Price 6s. net.

Dr. Allen is well known as an enthusiastic worker on the vaccine treatment of catarrhal disorders of the respiratory tract, and has done much to bring this method before the profession. The volume now before us is the result of ten years spent in investigating the subject, and the fact that it is to very large extent a record of the author's personal observations makes it of especial value. In the opening chapters the bacteriology of the respiratory tract is fully discussed, and the technique of obtaining material suitable for cultures. Next comes a chapter on the general vaccine therapy of respiratory disorders, which is followed by accounts of the methods and results in special diseases. So far as the purely bacteriological part of the book is concerned the practitioner can scarcely be expected to derive much help from its perusal, since the preparation of vaccines must necessarily remain in the hands of specialists. Dr. Allen, however, has made some interesting observations on the relation between definite clinical types of catarrh and different specific organisms; facts such as these may well assist in giving a clue to the vaccine most likely to be of service. The varying incidence of different organisms in successive epidemics is well brought out. Dr. Allen is, as we have said, an enthusiast as to the value of vaccines, and we are not prepared to endorse all he says as to the benefits which they produce. Nevertheless, such a book as his should stimulate others to use them more extensively, and ensure that they shall have a thorough trial, not only in ordinary colds but in all bacterial respiratory diseases.

Tuberculosis, Treatment of: Ordinary Therapeutics of Medical Men. By Professor Albert Robin, Paris Faculty of Medicine. Translated by Dr. Léon Blanc, Physician to the Hospital Aix-les-Bains, and H. de Méràc, Surgeon to the French Hospital, London. Pp. 616. London: J. & A. Churchill. 1913. Price 18s. net.

The English translation of this work retains all the defects which we commented on in the original last year. It is extremely verbose and also polemical at parts. The author appears to consider that he alone appreciates the importance of the "morbid soil" upon which the tubercle bacillus flourishes, but in this country, at all events, both the soil and the environment receive due weight. Professor Robin enumerates the signs by which the soil or tuberculous predisposition is to be recognised, but we are struck by the fact that the picture he here draws would be labelled early tuberculosis by most clinicians in this country, and not merely what he terms "a proneness to tuberculisation." In a chapter on pretuberculous organic demineralisation he lays forth his own peculiar views. This is followed by a chapter on organic remineralisation, in which we find a most remarkable number of drugs recommended to aid in bringing about this condition. We should imagine that but few of the numerous prescriptions scattered through the volume could be dispensed by an ordinary chemist.

The translation is excellently done, but the book is too much an expression of the distinctly peculiar personal opinions of its author to serve as a practical guide to the general practitioner.

Gout: Its Etiology, Pathology, and Treatment. By James Lindsay, M.D. (Edin.), M.R.C.P.(Lond.). Pp. 212. London: Henry Frowde and Hodder & Stoughton. 1913. Price 5s. net.

The object of this small book is chiefly to present the author's observations made in a study of about six hundred cases of gout at the Royal Mineral Water Hospital, Bath.

In Section I. of the book there are some useful tables showing the age and sex incidence of gout. In Section II., on the morbid anatomy and pathology, the views given are, of course, those already so well expressed by some of our best writers. Involved and ill-arranged sentences crop up much too frequently in this section. Other sections, comprising, with those mentioned, 140 pages of the volume, are on symptoms and forms of gout, X-rays in gout, and differential diagnosis of gout. The remaining 60 pages of the book are devoted to the consideration of treatment. There are some good illustrations.

The author frequently uses the expression "*in vitrio*," and occasionally "*in vitro*."

Skin Diseases in General Practice: Their Recognition and Treatment. By Haldwin Davis, M.B., F.R.C.S.(Eng.), Chief Assistant in the Skin Department, St. Bartholomew's Hospital, etc. Pp. 340. London: Henry Frowde and Hodder & Stoughton. 1913. Price 15s. net.

The classification of skin diseases has ever proved a crux to the writer on these ailments. Except in a limited number, etiology fails us. Primary lesions as a basis are also misleading, for these are liable to be masked or altered by superadded complications The topographical arrangement originally adopted by Sabouraud, and followed here, has advantages and drawbacks. It is not one to be recommended to the student, though it may serve as a guide to the practitioner. And here one may remark that the title of the volume is itself inappropriate, for most text-books on cutaneous disorders are intended for the general practitioner; the encyclopædic works alone appeal to the specialist in particular. The author has devoted much time and trouble to the compilation of the book, and in the main has succeeded well. His descriptions are, as a rule, concise and accurate, proving close observation, while the treatment suggested shows his acquaintance with the most recent methods. For such a volume to be useful, the means of making a precise diagnosis of a skin disease must be provided, and this having been determined, guidance for its suitable management should be laid down in sufficient detail. In our perusal we have come across some statements which need correction or amplification. Thus the allegations as to the parasite of ringworm as met with in the groin, and again as recently described as occurring between the toes, and more rarely the fingers, are mutually contradictory (compare pp. 198 and 224). Also the directions for the preparation of the invaluable boric starch poultice and for its use are quite inadequate. There are a number of points which will need emendation in a future edition. Under nomenclature dermatitis artefacta should be dermatitis autophyta. The illustrations are plentiful and well chosen, and should be found helpful. There is a good index, the lack of which much reduced the value of Sabouraud's otherwise excellent work.

Orthopædics in Medical Practice. By Professor Lorenz and Dr. Alfred Saxl. Translated by L. C. Peel Ritchie, F.R.C.S. Pp. 263. London: Bale, Sons & Danielsson, Ltd. 1913. Price 7s. 6d.

This volume lays no claim to be a text-book on orthopædic surgery, but is devoted to the study of orthopædics in their relationship to medical practice. The diagnosis and treatment of orthopædic conditions as met by the physician are dealt with, and the volume contains many practical points which are not found in the ordinary text-book. While the authors have given a fairly comprehensive review of modern

opinion on the different subjects, one is enabled to gain special insight into the methods associated with the name of Professor Lorenz. The printing is good and clear, and there is an exhaustive bibliography.

Mr. Peel Ritchie is to be congratulated on his well written and lucid translation of this work. This book should be appreciated by physicians and surgeons alike, containing as it does much of interest to both.

NEW EDITIONS.

Diseases of Women. By G. E. Herman, M.B., F.R.C.S., and R. Drummond Maxwell, M.D., F.R.C.S. Fourth Edition. Pp. 899. London: Cassell & Co. 1913. Price 25s.

In preparing this new edition of his well-known work on *Diseases of Women* Dr. Herman has obtained the assistance of Dr. Maxwell, who has helped to revise the volume and add descriptions of some more recent operations. It is intended for both students and graduates, but we would suggest that it is more fitted for the latter than the former, owing to its unusual method of division and unconventional groupings. The whole book bears witness to the strong individuality of the author, who expresses his opinions with great force. We are inclined to cavil, however, at some of the assertions he makes, such as the statement that vaginal pessaries are useless in prolapse unless the uterus is displaced as well. Similarly, when he says that hypertrophy of the cervix is due to prolapse of the vagina he comes in conflict with the usual teaching on the subject. Perhaps the most marked omission in the book is that there is no description of the surgical treatment of inversion of the uterus, and treatment is restricted to replacement by Aveling's repositor, a method which should be obsolete in these days of aseptic surgery. There are two excellent chapters on malignant disease of the uterus, in which a very full description of Wertheim's operation is given.

The book is profusely illustrated with drawings of specimens and of the various stages of the operations described, and is of a convenient size for comfortable reading.

Text-Book of Diseases of the Nose, Throat, and Ear. By Francis R Packard, M.D. Second Edition. With 145 Illustrations. Pp. xvi. + 377. Philadelphia: J. B. Lippincott Co. 1913. Price 15s. net.

The author states in his preface that since the first appearance of his book in 1909 strides have been made which have rendered necessary the re-writing of numerous portions of the original text. Unfortunately, however, some of the most important recent work does not appear to be referred to: for instance, no account is given of the functional examination of the labyrinth, nor is labyrinthine sup

puration described. Again, in the section on treatment of tuberculous disease of the larynx no mention is made of injections of alcohol for dysphagia, nor of the use of the cautery, nor of the use of tuberculin. These are but a few of numerous omissions which we have noticed in reading this work. The general appearance of the book and the printing is all that can be desired.

Lang's German-English Dictionary of Terms Used in Medicine and the Allied Sciences. Second Edition, Edited and Revised, by MILTON K. MEYERS, M.D. Pp. viii. + 564. London: J. & A. Churchill. 1913. Price 18s. net.

IN this compendious dictionary there are nearly 50,000 entries, the additions made since the first edition was issued numbering 4400. It is thus a very comprehensive and useful aid to the English student of German medical literature. In glancing through its pages we noted a few inaccuracies and omissions, and have no hesitation in pointing these out in view of the likelihood of further editions being called for. *Schwerverdaulichkeit* is rendered "dyspepsia" instead of indigestibility. *Heine-medinsche Krankheit* is translated as "spastic spinal paralysis of infancy," whereas it is the name of acute poliomyelitis or "infantile paralysis." On the other hand, *Little'sche Krankheit*, or cerebral diplegia, is omitted, as also is *Werdnig-Hoffman-sche Krankheit*. We venture to draw particular attention to these, because it is claimed in the preface that special care has been taken "in the rendering of those diseases and symptoms to which in German personal names are applied." Turning to some omissions we noted that *decubitus*, meaning a pressure ulcer or bedsore; *dekomposition*, marasmus; *milchnährschaden*, milk injury; *bilanz-storung*, weight disturbance; *oxypathie*, a diathesis of childhood; *parenteral*, signifying non-intestinal; *abreagiren*, to abreact, in Freud's nomenclature, are not to be found. We are well aware that the facility with which new words can be coined in German renders it impossible that any dictionary can give all that are in use. Still, those which we mention have all passed into currency, and ought not to be left out of a dictionary. We would not have it thought, however, that these criticisms are intended in any way as aspersions on Dr. Meyer's work. On the contrary, it is only because his lexicon is so complete and extensive that we troubled to seek in it for flaws.

NOTES ON BOOKS.

The Healthy Marriage, by G. T. Wrench, M.D., Past Assistant-Master of the Rotunda Hospital, Dublin (Churchill, price 3s. 6d.), deals with many delicate problems with discrimination, sense, and reserve. It is a useful book.

The series of "National Insurance Prescriptions" which have already appeared in *The Prescriber* have now been issued as a booklet from the

offices of the journal at the modest price of sixpence. Prescriptions containing drugs not included in the official tariff are starred. The list is well chosen and should prove useful.

ANALYTICAL REPORTS.

"Enule" "Epinine" Suppositories.

(Burroughs Wellcome & Co.)

An "enule" suppository containing $\frac{1}{6}$ grain of "epinine" has been added to their list by Messrs. Burroughs Wellcome & Co. The use of this synthetic haemostatic, which resembles in its action the active principle of suprarenal gland, has been suggested as a suitable procedure, pending operative interference, in cases of haemorrhoids, cancer of the rectum accompanied by haemorrhage, and similar conditions. The normal dose, 0·01 grm. ($\frac{1}{6}$ gr.), being evenly diffused throughout the mass of the suppository, provides a local vaso-constrictor action without unduly raising the blood-pressure throughout the body. Like all "enule" suppositories, this product is of a special shape, with a bulbous end, which renders its administration and retention *in situ* easy and certain.

Phosphocose.

(The Bayer Co., Ltd.)

This is a new preparation of somatose, to which glycerophosphate is added. It forms a syrupy fluid with a pleasant taste and flavour, and is an excellent nerve food tonic. As it contains no alcohol or other preservative, and is sent out sterilised, it must be prescribed in the original bottle.

Vitafer.

(Southhall Brothers & Barclay.)

Vitafer is one of the class of tonic foods which are at present so popular. It consists of milk protein and the glycerophosphates of calcium, sodium, and magnesium. The absence of nucleo-proteins is claimed as an advantage in arthritic patients, while the absence of carbohydrates renders it suitable in cases of diabetes. The glycerophosphates are readily assimilated, while the rather high proportion of the magnesium salt (2·2 per cent.) obviates any tendency to constipation. There is no doubt that preparations containing phosphorus and casein in a readily digestible form are well borne by most persons, and that benefit follows their use in many forms of debility and malnutrition. Vitafer is a British product, and is moderate in price, so that it has extrinsic merit as well as intrinsic value. We believe that it will be found useful as an adjuvant in the treatment of many diseases.

B. B. M. Flour.

(Argyll Milling Co., Glasgow.)

There is no doubt, we suppose, that a whole-meal flour has many points of superiority over ordinary flour. For this reason we venture to predict that the demand for flour such as the sample before us will increase. B. B. M. flour is a pure flour, ground by the old milling-stones, and it contains, therefore, a large proportion of protein and mineral matters. Phosphates are present to the extent of 0·45 per cent., while in ordinary white flour they amount only to about 0·06 per cent. It is desirable that such flour as this, which is not bleached by nitrogen peroxide, should be more widely used as a food stuff.

BOOKS RECEIVED.

ADAM, J. Asthma and its Radical Treatment . . . . . (*H. Kimpton*) 5s.
BOHM, MAX. Massage: Its Principles and Technic . . . . (*W. B. Saunders Co.*) 7s. 6d.
BURNHAM, F. W. E. Hæmocytes and Hæmic Infections . . . . . (*H. K. Lewis*) 25s.
CLAYTON-GREENE, W. H. Pye's Elementary Bandaging and Surgical Dressing. Thirteenth Edition . . . . . (*Wright & Sons*) 2s.
COLLECTED Papers by the Staff of St. Mary's Hospital, Mayo, Clinic (*W. B. Saunders Co.*) 24s.
COLLIE, J., and C. F. WIGHTMAN. Home Health and Domestic Hygiene . (*Gill & Son*) 9d.
CREDE-HORDER, C. A. Die Augeneiterung der Neugeborenen . . (*S. Karger, Berlin*) Mk. 5
CRIPPS, H. Cancer of the Rectum. Sixth Edition . . . . (*J. & A. Churchill*) 5s.
CRIPPS, H. On Diseases of the Rectum and Anus. Fourth Edition . (*J. & A. Churchill*) 10s. 6d.
DEGARMO, W. B. Mechanical Treatment of Abdominal Hernia . . (*Lippincott Co.*) 6s.
DEJERNE, J., and E. GAUCKLER. The Psychoneuroses and their Treatment by Psychotherapy . . . . . (*Lippincott Co.*) 18s.
DREW, G. A. Invertebrate Zoology. Third Edition . . . (*W. B. Saunders Co.*) 6s.
EYRE, J. W. H. Bacteriological Technique. Second Edition . (*W. B. Saunders Co.*) —
FOWLER, R. S. The Operating Room and the Patient. Third Edition (*W. B. Saunders Co.*) 15s.
FOX, R. F. Principles and Practice of Medical Hydrology . (*London University Press*) 6s.
GHOSH, B. N., and J. L. DAS. Hygiene and Public Health . . . (*Hilton, Calcutta*) 5s.
GHOSH, R. Materia Medica and Therapeutics. Fifth Edition . . (*Hilton, Calcutta*) 7s. 6d.
GORDON, W. The Place of Climatology in Medicine . . . . . (*H. K. Lewis*) 3s. 6d.
GRAHAM, D. Massage. Fourth Edition . . . . . (*Lippincott Co.*) 21s.
GRAY, H. Anatomy, Descriptive and Applied. Eighteenth Edition (*Longmans, Green & Co.*) 32s.
GREEN-ARMYTAGE, V. B. Labour-Room Clinics . . (*Thacker, Spink & Co., Calcutta*) 2s. 6d.
HANDBUCH der Biochemie des Menschen und der Tiere, 1913 . . . (*Fischer, Jena*) Mk. 26
HERMAN, G. E., and R. D. MAXWELL. The Student's Handbook of Gynæcology. Second Edition . . . . . (*Cassells & Co.*) 7s. 6d.
HIRSCHFELDER, A. D. Diseases of the Heart and Aorta. Second Edition (*Lippincott Co.*) 25s.
HOPE, E. W., E. A. BROWNE, and C. S. SHERRINGTON. A Manual of School Hygiene. New Edition . . . . . (*Cambridge University Press*) —
INTERNATIONAL Clinics. Series 23, Vols. I., II., 1913 . . . . (*Lippincott Co.*) 35s.
KERRISON, P. D. Diseases of the Ear . . . . . (*Lippincott Co.*) 21s.
KRAUSE, R. A Course in Normal Histology. Part II. . . . . (*Rebman, Ltd.*) 25s.
LOCKWOOD, C. B. Cancer of the Breast . . . . . (*Frowde, Hodder & Stoughton*) 10s. 6d.
LUYS, G. Gonorrhea and its Complications . . . . (*Baillière, Tindall & Cox*) 15s.
MAKINS, G. H. Surgical Experiences in South Africa, 1899, 1900. Sixth Edition (*Frowde, Hodder & Stoughton*) 10s. 6d.
MORRIS, R. S. Clinical Laboratory Methods . . . . . (*Appleton & Co.*) 12s. 6d.
MUIR, R., and J. RITCHIE. Manual of Bacteriology. Sixth Edition (*Frowde, Hodder & Stoughton*) 10s. 6d.
MULLER'S Serodiagnostic Methods . . . . . (*Lippincott Co.*) 6s.
NONNE, M. Syphilis and the Nervous System . . . . . (*Lippincott Co.*) 18s.
NORRIS, C. C. Gonorrhea in Women . . . . . (*W. B. Saunders Co.*) 25s.
ORTNER, W. Treatment of Internal Diseases. Second Edition . . (*Lippincott Co.*) 21s.
PATON, D. NOEL. The Nervous and Chemical Regulations of Metabolism (*Macmillan & Co.*) 6s.
POYNTON, F. J., and A. PAINE. Researches on Rheumatism . . . (*J. & A. Churchill*) 15s.
PRACTICAL Medicine Series. Vol. I. General Medicine . . . (*Year Book Publishers*) dol. 1.50
PRACTICAL Medicine Series. Vol. III. Eye, Ear, Nose, and Throat (*Year Book Publishers*) dol. 1.50
PRACTICAL Medicine Series. Vol. IV. Gynecology . . . (*Year Book Publishers*) dol. 1.35
PRACTICAL Medicine Series. Vol. V. Pediatrics and Orthopedic Surgery (*Year Book Publishers*) dol. 1.35
RAIMIST, J. M. Hysterie . . . . . (*Karger, Berlin*) Mk. 3.50
ROGERS, L. Dysenteries: Their Differentiation and Treatment (*Frowde, Hodder & Stoughton*) 10s. 6d.
ROSENAU, M. J. Preventive Medicine and Hygiene . . . . (*Appleton & Co.*) 25s.
ST. THOMAS' Hospital Reports. Vol. XL. . . . . (*J. & A. Churchill*) 8s. 6d.
SAWYER, J. Contributions to Practical Medicine. Fifth Edition . (*Cornish Brothers*) —
STEWART, F. T. A Manual of Surgery. Third Edition . . . . (*J. & A. Churchill*) 16s.
SWAYNE, J. G. Obstetric Aphorisms. Eleventh Edition . . . (*J. & A. Churchill*) 3s. 6d.
TAUFFER, W. Abhandlungen aus dem Gebiete der Geburtshilfe u. Gynækologie. Bd. II. Heft 2 . . . . . (*Karger, Berlin*) Mk. 6
THE Control of Measles. By various Authors . . . . . (*J. & A. Churchill*) 1s.
THE Deaf. Compiled by the National Bureau . . . . . (*P. S. King*) 6d.
THOMPSON, C. J. S. Compendium of the Pharmacopœias and Formularies. Fourth Edition . . . . . (*Bale, Sons & Danielsson*) 5s.
WEGELE, C. Therapeutics of the Gastro-Intestinal Tract . . . . (*Rebman, Ltd.*) 12s. 6d.
WICKHAM, L., and P. DEGRAIS. Radium and Cancer . . . . (*Bartholomew Press*) 2s. 6d.
WILHELM, A. Les Hystérotomies Vaginales en Obstétrique . . (*A. Legard, Paris*) —

EDINBURGH MEDICAL JOURNAL.

EDITORIAL NOTES.

Collective Report on Perforated Duodenal Ulcer.

SOME months ago we invited the surgeons in the Edinburgh School to undertake a collective investigation on the subject of perforated duodenal ulcer, and we have much pleasure in publishing in the present issue the results of the inquiry. We desire here to thank those who so cordially responded to our request for data, and the members of the Committee who undertook the laborious work of compiling the facts. The series of 200 cases may be taken to include practically all the cases operated upon in the Edinburgh district up to the end of 1912, and the report, we venture to think, is a contribution to the literature of the subject of considerable value. The Committee have confined themselves to recording the facts as brought out by the schedules, and have drawn only such inferences as these facts in themselves seem to warrant. No attempt has been made to compare the results of this inquiry with previously recorded work on similar lines, or to correlate them with the presently accepted views.

It is proposed to carry out a similar inquiry on the subject of perforated gastric ulcer, and we would bespeak the renewed co-operation of those who have contributed to the present investigation.

It appears to us that there are many subjects on which collective investigations might profitably be carried out on the lines which have been adopted in this inquiry, and we shall willingly place such facilities as the *Journal* can offer at the disposal of any committee formed with this object.

John Macmillan, M.A., M.B., C.M., D.Sc., F.R.C.P., F.R.C.S., F.R.S.E.

IT is with sincere regret that we record the death of John Macmillan, which took place at 22 George Square on 7th October. After graduating M.A. in the University of St. Andrews, and B.Sc. in Natural Science in Edinburgh, in 1879, Dr. Macmillan entered the scholastic profession, and for a number of years was a member of the staff of Perth Academy, and later of the Edinburgh Academy and George Watson's College. In 1892 he graduated M.B., C.M., in the University of Edinburgh, and during his undergraduate career had the unusual experience of being taught and examined by several of those who had been his pupils at school. In 1893 he obtained the B.Sc. in Public Health, and the following year was awarded the D.Sc. for a thesis dealing with the milk supply of Edinburgh. He subsequently became a Fellow of the Royal College of Physicians and a Fellow of the Royal College of Surgeons of Edinburgh. He was also a Fellow of the Royal Society of Edinburgh and of various

other professional and scientific societies in the city. In 1910 he became a Lecturer on Medical Jurisprudence and Public Health in the Extra-Mural School. The comparatively late period at which Dr. Macmillan embraced the profession of medicine alone prevented him attaining the position to which his unusual scientific and intellectual abilities entitled him.

To his more intimate friends, and only they knew the real man, John Macmillan will always be remembered as one who touched life at an exceptional number of points. An accomplished mathematician and a born naturalist, he had also a remarkably wide and accurate knowledge of all that is best in literature. His artistic temperament, and, be it said, his Bohemian tendencies, brought him into touch with many artists, musicians, and writers, and he was a welcome member of many of the literary and artistic coteries in which Edinburgh abounds. His favourite recreation was hill climbing, and as a member of the Scottish Mountaineering Club he has ascended every hill in Scotland that counts, as well as many of the Alpine peaks. For many years his daily constitutional took him to the top of Arthur's Seat, and few men knew "the ben," as he fondly called it, as he did.

For his kindliness and sympathy, his simplicity of character, and his old-world courtliness and chivalry, John Macmillan will long be remembered with affection by his intimates.

Appointment.

Dr. William Russell has been appointed by the University Court Moncrieff Arnot Professor of Clinical Medicine in the University of Edinburgh.

The Liston Victoria Jubilee Prize.

At a meeting of the Royal College of Surgeons of Edinburgh, held on 15th October, the Liston Victoria Jubilee Prize of £100 was awarded to Mr. John David Malcolm, M.B., F.R.C.S.E., London, for his investigation of Surgical Shock.

The Medico-Chirurgical and Obstetrical Societies.

By agreement between the two principal medical societies and the authorities of the Royal Victoria Dispensary, the former bodies will in future make use of the lecture hall attached to the Dispensary for their meetings. The hall, having been specially designed for such a purpose, is in many respects better adapted for the meeting of a medical society than those which the two bodies have hitherto used; but, more than this, the mere fact of having a common habitation will bring the societies into closer touch with one another than in the past. Although the erection of a medical hall or institute, suitable for gatherings of this kind, and for such meetings—that of the Association of Physicians, for example—as occur periodically, has often been talked about, the the idea has rather fallen into abeyance of late years. An opportunity seemed to offer at the time that the Royal Society of Edinburgh

changed its quarters, for there seemed a possibility then that the various scientific societies in the city might unite to obtain suitable premises, but nothing came of the suggestion. The need has never been in reality pressing, owing to the facilities for medical meetings which are so liberally accorded by the Royal Colleges and the University. The new arrangement, although it falls short of the larger ideal, is, however, a step in the right direction and may prove the forerunner of some such institute.

The lecture hall affords ample facilities for the exhibition of patients; it has been specially fitted up for microscopic demonstrations, and the three bodies concerned in the bargain have acquired an epidiascope for the projection on a screen, lantern-slide fashion, of pathological specimens and other opaque objects used to illustrate papers.

To celebrate their joint tenancy of a hall, the Obstetrical and Medico-Chirurgical Societies held a joint meeting on 29th October, at which an address on Eugenics was delivered by Major Leonard Darwin. In the interests of both societies it would be an excellent plan to hold such joint meetings from time to time, and to discuss at them topics which have a bearing on the whole range of medicine, surgery, and midwifery.

Royal College of Surgeons of Edinburgh.—The following gentlemen, having passed the requisite examinations, have been admitted Fellows:—H. E. Arbuckle, M.D.(Edin.), D.P.H.(Camb.), West African Medical Service; J. F. Bennett, M.B., Ch.B.(Glasg.), Marlborough, New Zealand; J. D. Fiddes, M.B., Ch.B.(Aberd.), Aberdeen; P. L. Foote, M.B., Ch.B.(New Zeal.), M.R.C.S., L.R.C.P.(Lond.), New Zealand; M'Williams Henry, L.R.C.S.E. (Triple Qual.), Halifax, Yorks.; H. F. Holmden, M.B., Ch.B.(Edin.), Edinburgh; H. C. Merserau, M.D., C.M.(M'Gill), New Brunswick, Canada; J. J. H. Nelson, M.D.(Edin.), Captain, Indian Medical Service; A. B. Pestonji, L.M.&S.(Bombay), M.R.C.S.(Eng.), L.R.C.P.(Lond.), D.P.H.(Camb.), London, N.W.; R. F. Steel, M.B., Ch.B.(Dub.), Captain, Indian Medical Service; H. M. B. Stratford, M.R.C.S.(Eng.), L.R.C.P.(Lond.), London, W.; A. R. Thomas, M.R.C.S.(Eng.), L.R.C.P.(Lond.), Staff Surgeon, Royal Navy; S. H. Middleton-West, M.B., Ch.B.(Manc.), M.R.C.S.(Eng.), L.R.C.P.(Lond.), Captain, Indian Medical Service; and H. B. Wyman, M.D., C.M.(M'Gill), L.R.C.S.E. (Triple Qual.), Quebec, Canada.

Royal College of Physicians of Edinburgh, Royal College of Surgeons of Edinburgh, and Royal Faculty of Physicians and Surgeons of Glasgow.—The following candidates, having passed the requisite examinations of the above Board in October, were admitted Diplomates in Public Health: A. D. Campbell, M.B., Ch.B.(Edin.); C. R. Vohra, L.R.C.P.&S.E.; Charles Cameron, M.B., Ch.B.(Edin.); W. A. Muir, M.B., Ch.B.; N. R. R. Ubhaya, L.R.C.P.&S.E.; Andrew Campbell, M.B., Ch.B.(Edin.); G. G. Jolly, M.B., Ch.B.(Edin.); W. S. M'Laren, M.B., Ch.B.(Edin.); J. D. Saner, M.B., C.M.(Edin.); M. L. Bangara, M.B., Ch.B.(Edin.); George Richardson, M.D., etc. (Edin.); A. G. Ingram, M.B., C.M.(Aberd.); J. A. MacLeod, M.B., Ch.B.(Edin.).

THE DEVELOPMENT OF BACTERIOLOGY AND THE PLACE IT OCCUPIES AMONGST THE SCIENCES.

An Inaugural Lecture delivered 7th October by James Ritchie, M.D., Robert Irvine Professor of Bacteriology in the University of Edinburgh.

In inaugurating the work of the Chair of Bacteriology I feel it would not be seemly if the occasion were allowed to pass without some reference being made to the benefactor to whom the University owes this foundation. Born in 1839, Robert Irvine was educated at the Royal High School, and early showed leanings to chemistry. He studied the subject under, and later became assistant to, Dr. George Wilson, then Lecturer on Chemistry at Surgeons' Hall—a man of remarkable and stimulating personality, who was afterwards the first and only Professor of Technology in this University, and one of the organisers of what is now the Royal Scottish Museum. After some years of work with Dr. Wilson, Irvine devoted himself to the technical side of his science, and became connected, first as chemical assistant and later as director, with Messrs. A. B. Fleming & Co., the great firm of printing ink manufacturers of this city. In his proper life-work he added to high business qualities the gift of applying scientific results to technical ends. He was fertile in suggestion and ingenious in experiment, and to him nothing but the latest and the best would give satisfaction. The opinion of others on the value of his contributions to science is evidenced by his being awarded medals by both the Royal Society of Edinburgh and the Royal Scottish Society of Arts for the papers he read before these learned bodies. The spirit of inquiry dominated his life, for his leisure was devoted to the study of scientific problems not immediately connected with his own life's work. Moreover, he and his wife—a woman of kindred spirit—made their home at Granton the centre of a scientific coterie, where Irvine was ever ready to discuss the subjects in which the different members were interested. It is to the acuteness of observation and to the enterprise of one of these friends, Sir John Murray, that the University owes the rapid realisation of the provisions of Mr. Irvine's will. Another member of the circle was Professor Sims Woodhead, one of the earliest workers at bacteriology in Britain. With Professor Woodhead, Irvine frequently discussed the subject, in which he took a keen interest, and he chose it as that branch of science which he wished after his death to benefit. I once had the

privilege of meeting him, and found him fully informed of its history, keenly interested in its problems, and in how these problems were to be faced. An uneventful life devoted to the promotion of industrial efficiency Irvine's appears superficially to have been, but it was the personality behind it which appealed to his friends. I well remember feeling when his death occurred in 1902 that the world was poorer for the loss of a single-hearted "aefauld" Scot; and if this was the impression of a few hours' meeting, one can understand the depth of feeling with which his friends speak of him. Generous, courteous, kind, often self-depreciatory, but always holding inflexibly to what he considered right, he was one of those rare souls whom none can decry. His humanity—deepened by a bereavement which clouded his later years—is evidenced by the fact that now that the primary object of his benefaction is realised three of the great medical charities of Edinburgh are to benefit as residuaries. It is thus fitting that to-day we should think with affectionate regard of this upright, unassuming man who wished the University well, who gave of his means to promote her interests, and whose name will ever be associated with that of this Chair as a memorial and as an example.

The science of bacteriology, which Mr. Irvine's benefaction has raised to professorial rank, is of such recent growth that it may be said not yet to have attained its jubilee. Thus most men now in middle life have gone through the process of altering and accommodating their outlook to a world into which there has entered the new factor of the part played by bacteria in human affairs. The beginnings of a new movement are always difficult to trace, and of the workers in several branches of science during the middle of the nineteenth century it might be said that they knew of bacteria "as much as might be gathered by one coming in the twilight to seek satisfaction." As early as 1837 attention had been directed by Schwann to the possible importance of the ultimate and as yet unclassified forms of life which the microscopes of the period revealed. But though that great pioneer in the doctrine of the cell as the unit of life believed that his proof of yeast as the cause of fermentation was complete, the time was not ripe for his view becoming part of the capital of knowledge. During succeeding years the growing recognition of the potentialities present in bacteria gave a new lease of life to the theory of spontaneous generation. Its upholders now had an experimental basis whose fallacies were more difficult to expose than when their predecessors pro-

duced a brood of scorpions by placing sprigs of basil in a hollow brick and baking it in the sun. The exposure came none the less, and by throwing new light on the capacities of bacteria contributed to the growing sense of their importance. A third line of inquiry along which workers were groping was that concerned with infection. In 1865 Villemin produced tuberculosis by artificial inoculation with tuberculous material, and thus the doctrine of the constitution of the individual as the chief factor in causing the most important of human disease was challenged. Such were the main movements of the age when to the dusk came the light of Pasteur's genius, to demonstrate what others could only feel must be true. Dealing as a chemist with the properties of dextro- and lævo-rotatory tartaric acids, his first contact with vital phenomena was in the discovery that the right-handed acid was fermentable while the left-handed was not. It is questionable, however, whether Pasteur would have forsaken pure chemistry for biological inquiries; but with him, as with others, life is

> . . . a chequer-board of nights and days
> Where destiny with men for pieces plays,

and when he was hesitating, his appointment to be Dean of the Faculty of Sciences at Lille, where alcohol production is a principal industry, led him to undertake researches resulting in the triumphant demonstration of yeast as the cause of fermentation, and of the part played by bacteria in other similar processes and in putrefaction. Later, also, it is doubtful whether he would have undertaken the work on silkworm disease, which started his interest in infection, had it not been that his great friend M. Dumas was a native of the district where the ravages of the malady were most serious. Pasteur's contributions to pathology were, however, of a later date, and the importance of his early researches lies in the fact that they formed the basis for the work of Lister, with which the Edinburgh school will be ever associated. From the time when the antiseptic system was established, the part played by bacteria as originators of human suffering riveted the attention of the world. At first Lister apparently looked on the mere occurrence of putrefaction in a wound as the essential danger to be guarded against, but very soon, under the influence of the work of Burdon-Sanderson, he appreciated the risk following on the actual entrance of a special group of bacteria into the tissues and their multiplication there. The link which completed the proof of the existence of this risk was supplied when in 1877 Koch, the third great figure in bacteriological history, isolated in

pure culture the anthrax bacillus and reproduced experimentally this septicæmic disease as it occurs in the natural infection. The discovery was accompanied by others of a still more far-reaching nature, for Koch substituted for the previous elaborate and imperfect technique simple and efficient methods for the isolation and growth of bacteria. It is thus in 1877 that bacteriology as a science took its birth. Shortly thereafter Koch was established as head of the Imperial Board of Health at Berlin, and to his laboratory there flocked workers from all parts of the world. By 1886 tuberculosis, diphtheria, typhoid fever, septicæmia and pyæmia in all their forms, cholera, glanders, and pneumonia had been shown to have a bacterial origin. Furthermore, the group of true bacteria—the cocci, the bacilli, and the spirilla—had been defined, and the canons of evidence to be fulfilled before a causal nexus between an organism and a disease can be established had been laid down and tested. Since that date the causal factors in other diseases—tetanus, plague, Malta fever—have been determined, and probably the list of diseases traceable to the true bacteria is now almost complete.

While the contributions of bacteriology to medicine were the earliest, the most sensational, and the most far-reaching, altering as they did the whole conception of infection, the science has also benefited many other human interests. Pasteur early worked at the diseases of wines and beer, and those concerned in every industry dependent on the maintenance of organic matter in its native state have had the conditions under which this could be attained, defined and controlled. As investigations designed with this purpose have progressed, the importance of the action of beneficent bacteria has emerged. Such primitive and homely procedures as the making of butter and cheese, which depend on the souring or curdling of milk by bacterial action, have been placed on a new basis. In agriculture, too, the significant fact was discovered that bacteria existed which were capable of enriching the soil by taking up the usually inert atmospheric nitrogen, and it is known that this is only one of the many fertilising processes for which they are responsible.

When we have a science which touches human affairs at so many points there may appear to be a difficulty in assigning it a sphere in which it can deal with a group of phenomena without entrenching on the domain of other sciences. But we must recognise that, as all knowledge is one, its divisions are inevitably somewhat arbitrary and often the product of convenience. In the case of

bacteriology it came into prominence by giving a new meaning to the word infection, and this at once made it a branch of pathology, the science concerned with the phenomena of disease. This association, which followed from its historical development, was supported by the immense practical importance of the infections in human affairs, for, in temperate climates at any rate, these diseases are responsible for nearly one-half the total death-rate. The further investigation of the subject gave scientific sanction to the association of bacteriology primarily with pathology. The new concept made infection essentially the growth of one living organism on another. But it was soon found that the infected organism was no mere passive mass of food for the invader—that the relationship was, in fact, an interaction. The problems of this interaction were new, and the most important were those which revealed the possession of unexpected capacities by the invaded organism. It had, of course, been a commonplace for ages that one attack of an infectious disease frequently protected an individual against subsequent infection, and the established facts regarding Jennerian inoculation as a prophylactic in small-pox at once led bacteriologists to try whether similar results could be obtained with artificial cultures of disease agents. The attempt was successful, and led to the discovery that often the fluids of the blood of an animal immunised against a disease had developed the property of preventing and curing that disease in untreated subjects. This formed the basis of the serum treatment of diphtheria, which has done so much to save human life. The field of inquiry thus opened up was so wide that it soon became the special province of bacteriology, but its further exploration has drawn bacteriology and the wider science of pathology together in that problems have emerged of which both are equally ignorant. It was found that the degree of immunity which can be artificially produced varies in different diseases, and though the existence of such immunity is almost always reflected in an alteration of the body fluids, the nature of the reaction is excessively obscure and the occurrence cannot be utilised for therapeutic purposes. Here it may be remarked incidentally that our want of knowledge of the conditions of these incomplete immunisations gives a purely empiric quality to much of the current vaccine treatment at present so widely practised. From such considerations it has become evident that the whole question of how pathogenic bacteria, especially those which live and freely multiply in the tissues, really produce their effects, must be

reinvestigated. For instance, no one knows why infection with the organism of pneumonia should be characterised by fever. Because the paralysis of diphtheria is due to a poison produced by the organism, it is common to attribute all bacterial action to such bodies, but no poison has ever been isolated which can reproduce the phenomena of any bacterial fever. Of late years much attention has been directed to a phase of the reaction to bacterial invasion which may not only hold the key of this mystery, but which brings bacteriology into relation with physiology. It has been for long known that while substances derived from bacterial protoplasm may produce little change in normal animals, a minute quantity may originate serious effects in an animal in whose body the bacteria have already begun to multiply, but it is also now known that the administration of a non-toxic proteid such as serum may cause the animal to die if subsequently a second minute dose of the material be given. Whether or no this hypersensitiveness—the antithesis of immunity—throws light on the pathology of infection is for the future to determine, but the fact that hypersensitiveness may be manifested when a foreign albumin is first introduced into the animal body is of physiological importance in relation to the conditions under which an animal after birth accommodates itself to its food. Further, the serology of immunity has demonstrated the existence in the body fluids of properties, and it may be of substances, which the grosser methods of physiological chemistry could not have revealed. The investigation of these can hardly fail to throw light on the mechanism of assimilation, and in any case shows that bacteriology has relationships to the normal as well as to the diseased state.

The very failures of bacteriology are likely to have an important bearing on kindred sciences. While all bacterial invasions are infections, it does not follow that all infections are due to bacterial invasion. Certain diseases such as measles, smallpox, typhus fever, hydrophobia, have resisted all the attempts made to associate them with any definite organism. All that can be certainly said is that the infective agent is, at least in one stage of its development, invisible to the highest microscopic powers. Bacteriology and protozoology have been feeling each from its own side for an explanation, and if the observations published from the Rockefeller Institute of New York during the last six weeks by Noguchi and by Flexner be confirmed, and parasites, probably of a non-bacterial nature, have been really cultivated from hydrophobia and from infantile paralysis, a new era of

knowledge regarding some of the most serious diseases of man will have been opened.

I cannot refer to the relation of bacteriology to scientific therapeutics, though here it has made notable contributions—directly by diminishing the death-rate in diphtheria and typhoid fever, and even perhaps in tuberculosis, and indirectly by giving preventive sanitation a rational basis. I will only say this, that the possibility of killing by chemical agents bacteria which have gained a footing in the body, which was the dream of many of the earlier workers, may any day become an accomplished fact. Nor can I speak of the debt under which the human race lies to the science which has lifted the burden of dread formerly associated with the mystery of epidemic disease. I must, however, say a word regarding the place which bacteriology may be expected to occupy in the curricula of a modern university. Here I think I have a word of comfort for the overworked student of medicine. I have a great hope that the knowledge of the subject required of him for a degree examination will be reduced to a minimum. Bacteriology is essentially a post-graduate study to be engaged in by the man of parts who looks forward to occupying a foremost position in the practice of medicine, by the specialist in sanitation, by those in the public services, above all, by the men of originality whose ability is such that they are capable of grappling with the multitudinous problems which await solution.

The position of the subject in this University is almost unique. It was known to be Mr. Irvine's prime desire to encourage original research, and this intention the University has resolved loyally to carry out so that the function of the Chair is primarily to foster inquiry and secondarily to be an instrument of instruction. The realisation of such a programme involves a heavy responsibility. For its success two conditions must be fulfilled. One is adequate financial provision. The old motto of the *Edinburgh Review*, "We cultivate learning on a little oatmeal," is for science now a dead letter. The Rockefeller Institute, to which I have referred, and which is one of the greatest centres of bacteriological research, has an endowment of over a million and a half sterling. Is there a Scottish Mæcenas who is ready to give the University of Edinburgh the opportunity for which she is waiting? If there is, there will, I think, be little difficulty in fulfilling the other condition, namely, the provision of a band of talented workers who will be ready to take advantage of the opportunity, and who will carry on the traditions which have in the past placed the Edinburgh School in the foremost rank.

ECZEMA: SOME SUGGESTIONS TOWARDS ITS PREVENTION AND TREATMENT.*

By W. ALLAN JAMIESON, LL.D., M.D., F.R.C.P.,
Knight of Grace of St. John of Jerusalem.

Though numerous skin diseases once classed as eczema, notably seborrhoeic dermatitis, have been separated from it, there is still an entity left which we may so designate. In its essence it is a catarrh of the skin, and no better definition can be formulated than that of my friend Sir Malcolm Morris—"a catarrhal inflammation of the skin originating without visible external irritation, and characterised in some stage of its evolution by serous exudation." This may be dry or moist, vesicular or papular, scaly or crusted; in appearance little different from the neighbouring healthy integument, or showing evidence of violent inflammation. It may be circumscribed to the smallest proportions, or it may be universally distributed. Though sterile to begin with, it may have its surface infected by micro-organisms of many kinds, which thus materially alter its characters. The affected area may have nearly its normal pliancy or be thickened to a leathery consistence. While not contagious, it yet possesses capacities whereby it advances into adjoining regions. The feature most annoying to the sufferer is the itchiness which accompanies it, and this leading to scratching, promotes extension into fresh territory. All catarrhal processes are associated with an upheaval of the epithelial layers of the tissue, whether the catarrh attacks the bronchial tubes, the intestinal canal, or the skin, and this may be greater or less in various instances. In its essential nature it is an interference with normal cornification. The thin, firm keratinous plate which forms the exterior of the integument becomes broken up and is hastily and imperfectly renewed, the surface being left rough and uneven.

Eczema is encountered at all ages and in all classes and conditions of life. No region of the body is immune from its aggression. It is, too, one of the commonest of cutaneous affections. Now I am often asked, "Is this gout?" In reply, whatever eczema is, it is assuredly not gout. Like many other ailments, eczema occurs in gouty persons, and perhaps in such it may prove more obstinate and intractable, but eczema and gout are not synonymous terms. Some individuals and some types of skin are more liable to eczema than others. A thin, anæmic, ill-

* A lecture delivered at the Edinburgh Post-Graduate Courses in Medicine, 1913.

nourished investiture is more readily involved in this catarrhal process than is a tough, well-lubricated and strong covering. But I am convinced that error in the proper management of our skins has much to do with the prevalence of eczema. Soap is largely the culprit. There is an idea, too deeply implanted in the mind of the average Briton to be easily eradicated, that it is not possible to be clean without soap. It is true that a skin soiled by contact with greasy substances is difficult to purify without soap, yet even this can be done. Moderate friction with a loofah in warmish water will remove the greater part of the dirt even in the worst cases, and this without damage to the horny layer of the epidermis. If soap must be used, then a well-made superfatted one, such as Baumol, ought to be had recourse to. Compare if you will the difference between a bath taken in fairly hard water—water containing lime or brackish—when a loofah and no soap is employed, with washing with soap and the hand or a sponge in the same water. The plain water feels pleasant and comfortable and glides over the skin; with soap it clings to the surface and gives rise to a harsh and irritating sensation, though it may cause the discoloration to vanish a little more rapidly. The outer layer of the epidermis is being continually shed in fine, dry particles, but it is in health renewed as quickly from beneath. If, however, we cause its premature separation before the horny flakes have become ripe, we leave the immature cells unprotected, prone to take on inflammatory action under the influence of the many irritant factors constantly at hand. In children, who are far too freely and frequently washed with soap, this is a very common cause of eczema. When soap has been used, all traces of it ought to be removed by rinsing the surface with plain water previous to drying, otherwise the harmful effect of the lather is made still worse. The use of water likewise at a heat above the natural temperature of the exterior of the body, which is about 93 F. (that of the circulating blood is 98·4° F.) weakens the resistance of the skin to the friction of the clothes, to changes of weather or the accidents of occupation, yet many persons habitually immerse themselves or sponge their persons with water very considerably above this limit, courting thereby the risks of disastrous results. If hot water is used a thermometer ought regularly to be placed in it before washing to determine the heat.

Dr. Frederick Gardiner has investigated the composition of many specimens of soap, has calculated their alkalinity, and

endeavoured to discover the reason why soap is apt to cause irritation of the skin. "When an alkaline solution, such as that of soap and water, comes in contact with the skin, there is induced an excessive secretion of the acid sebum and sweat and a solvent or softening effect on the protective epithelium." He thinks that the bad effects of modern domestic soaps are due to the cheaper fats employed in the manufacture, and to the presence in numerous samples of cotton-seed and cocoa-nut oils, which are both cutaneous irritants. Much the same may be said of palm-oil, also used in soap making. Old-fashioned soaps were made with tallow and with olive-oil, and these are less harmful. Soaps, too, were formerly kept for some time before being used, so that the excess of alkali sweated out, and in the case of transparent soaps could be seen as a fine bloom on the surface. Dr. Gardiner observes "that there is no scientific basis for the addition of extra fat to soaps, as when soap is mixed with water the alkali set free will at once unite with the superfluous fat." When attending the International Congress in London I met Dr. Unna, who, as you know, suggested the superfatting of soaps, and I had a short conversation with him on this question. He denied the correctness of the statement, and assured me that superfatted soaps were much less irritating than those made on the ordinary principle. I have certainly found superfatted soap well borne when ordinary toilet soap was not, and explain it in this way. In washing the hand, for example, the hydrolysis of the soap takes place in close contact with the skin. The extra fat given off does act on the wet surface and lessens the caustic action. This, of course, could not happen if we simply dissolved the soap in the water and used the lye thus obtained to wash with. We may compare its action in this respect with the plan of adding castor-oil to spirit lotions. The oil, if in due proportion, dissolves in the spirit, but with its evaporation is deposited on the skin or hair. In the same way linimentum calcis parts with its oil when painted on and acts as a lubricant. The circumstances are perhaps not quite identical, but are fairly parallel. In the prevention of eczema, therefore, it is incumbent on the individual not to deprive his skin unduly of its unctuousness, bearing in mind that both the sebaceous and the sweat glands, though probably not equally, contribute to its lubrication. The coil of the sweat gland is embedded in the subcutaneous adipose tissue, and a deficiency in this tissue is not unfrequently observed in those liable to eczema. Soap, as we have seen, steals the oleaginous investment away, and has no countervailing advantages. The

ancient Romans used to oil themselves after a bath, but for obvious reasons this procedure does not find favour now.

If the ordinary bath as commonly taken is injurious, the Turkish one would appear to be still more prejudicial. Here the skin cooked in the hot chambers and sodden with the profuse perspiration, is scrubbed and washed with strong soaps. No doubt a feeling of exhilaration may be experienced after such a bath, yet this is largely artificial, and if repeated too often tells detrimentally on the circulation. What its effect in inducing eczema may be, I have no data from which to draw conclusions. Sea air and sea bathing do not seem to be markedly harmful. Probably the improvement in the general health observable after a sojourn at the coast neutralises any stimulant effect on the skin which the presence of chloride of sodium in the air, or its contact with the integument in the water, might exert.

Certain constitutional disorders predispose to eczema, especially Bright's disease and diabetes. But perhaps worry and anxiety have even a greater influence in provoking an outbreak. Such are not in many cases under our control, but excitement and overwork should be avoided by those liable to it.

Some importance must be attached to clothing in the causation of eczema. Not to mention the presence of irritating dyes in the material, pigments which contain arsenic, rough undervests and drawers may do something in evoking an attack, by leading to scratching. It is a curious question, probably quite unsolvable,—Was eczema common in the monks and hermits of the Middle Ages, who, to mortify the flesh, wore hair shirts?

What influence does diet exert on the production of eczema? We have no precise recorded observations on this point, but it is permissible to say that alcohol, if indulged in too freely, by softening the entire structure of the skin, will predispose. Tea, also, if consumed in excess, by interfering with digestion, must favour its development, through limiting nutrition. It is true, notwithstanding, that we encounter eczema in the stalwart countryman as well as in the pale and less vigorous dweller in town.

And here it is incumbent on me to say a word in defence of an article of diet peculiar to Scotland, which is, I fear, not so commonly partaken of now as in the past. I refer to oatmeal porridge. One constantly hears it said: "Porridge is too heating"—often without the smallest idea of what is meant by the expression. The so-called "heating" properties ascribed to

porridge more properly applied to what was called "crowdie," a rough mixture of oatmeal and boiling water, whereby a lumpy, uninviting mess was produced, which, when eaten, caused heartburn, acidity, and occasionally vomiting. Being indigestible this may have led to skin eruptions or was thought to be the cause. But well-boiled porridge is a wholesome food, sufficient cooking being, however, imperative. Long boiling is now not so necessary, as by using rolled oats a palatable, nay, an attractive dish can be very easily prepared, one possessing all the merits and exhibiting none of the drawbacks of porridge made hurriedly from ordinary oatmeal. I am sure if porridge made from rolled oats be placed on the breakfast table, it will be hailed with acclamation, swallowed with satisfaction, and found thoroughly digestible.

A word may here be said as to the dietary of infants, a subject as to which there is considerable diversity of opinion. Many years since, when in general practice in Berwick-on-Tweed, the ignorance of the average mother as to how to feed her baby made a great impression on me. Where the mother had plenty of milk of good quality and was willing to suckle the child, the infant, as a rule, throve; but where from any cause the natural nutriment could not be had, then difficulties began. At that time (1868) there appeared the excellent work by Dr. Eustace Smith entitled *The Wasting Diseases of Children*, from which I learned much. He laid down that the best diluent for cow's milk is lime water, and to this view I still firmly adhere. The proportions differ somewhat with the richness of the milk: the thinner it is the less lime water should be added. If of average quality with a fair amount of cream, from one-half, for a brief period at first, of each, lime water and milk, reduced eventually to one-sixth of lime water, is about the quantity. A little sifted sugar should be put in, and, if poor, some cream. The mixture is now poured into the bottle, which must be kept scrupulously clean. It is brought to the proper temperature by immersing the bottle in warm water, taking care that this is not so hot as to crack the glass. The child should be fed every two or three hours, not pressing it to swallow more than it cares for. As it reaches six months, porridge or gruel made from rolled oats and farinaceous articles can replace a part of the milk and lime water, till the age for weaning is attained.

No other diluent, such as barley water, should be had recourse to as a substitute for lime water. The simplicity of this method is its recommendation, while the way in which the infant prospers in health of body and amiability of temper, affords positive proof

of its suitability. Eczema seldom shows itself in children so fed, and if it does, then local irritation from soap, or clothing, or possibly insects, is often to blame.

Some further suggestions bearing on the prophylaxis of eczema will be found in a work by the author, recently published by the Oxford University Medical Press, entitled *The Care of the Skin in Health*.

Passing now from the prevention to the treatment of eczema, one has to look at it from two standpoints: first as a local and circumscribed ailment, and another as widely or even universally diffused. We can deal with the local malady by methods which are not at our service when the evil is widespread.

We have seen that the eczematous surface is sterile to begin with, and in treatment our endeavour should be to preserve it aseptic. It is evident that this is only attainable in the case of limited and superficial patches, but the apothegm *principiis obsta*, "a stitch in time," has special force here. By coating the catarrhal region with an impervious varnish, we may prevent further progress. I have succeeded in arresting the advance of an eczema by painting with epicolloid, a solution of pyroxylin in acetic ether. This forms a thin film, which protects the parakeratosed area, and being waterproof, replaces the disturbed horny layer without causing irritation. Under it repair proceeds and the eczema disappears.

When, however, the diseased process has further advanced and has not only involved some extent of skin, but is no longer aseptic, then a plan is available, for the introduction of which I can claim priority. The boric starch poultice is an appliance it would be difficult to dispense with. Yet in some of the newer treatises on skin diseases, the mode of application, if not that of preparation, is erroneously laid down. The starch which furnishes the best poultice is Glenfield starch. Of this four tablespoonfuls are taken and a teaspoonful of powdered boric acid. Then a little cold water is poured on to form a paste, and to this a pint of boiling water is slowly added, and the whole stirred till it becomes a thick magma. Sometimes it is advisable to boil the starch for a few minutes to ensure a suitable consistence. The next direction is most important, but often omitted. The hot starch must be allowed to become perfectly cold. It should then present the appearance of a soft jelly. This is now spread to the thickness of three-quarters of an inch on pieces of cotton or linen cloth and the upper surface covered with butter muslin. This side is the

one to be placed on the skin, adjusting it carefully to the sinuosities of the part. The poultice is now to be secured in position by a bandage, but on no account is any impervious material such as oil-silk or guttapercha tissue to be put over it. Such a poultice may be left undisturbed for several hours, even all night. When it is removed and a fresh one applied, the part should be gently wiped. In this way all crusts and morbid accumulations can be got rid of without damage to the skin, and all fœtid odours cease from troubling. Under the poultice the eczema may heal, but as a rule improvement can only thus be carried a certain length, and other methods have to be resorted to. It is often a good plan to apply the poultices at night and use some other remedy during the day.

When ointments are selected as most appropriate, care must be taken that these are in themselves perfectly free from rancidity. At the time Erasmus Wilson did good by adding a little benzoic acid to his zinc ointment, as lard alone soon deteriorates as a base. But benzoic acid is itself an irritant, and we are now provided with excipients far superior to lard. So never prescribe zinc ointment of the Pharmacopœia: you do not know how long the specimen given to your patient has stood in the jar. Order an ointment made up fresh at the time. The very best excipient now available is eucerin, which is an ointment base prepared from the pure wax alcohols of wool fat. It is the hygroscopic constituent of wool fat, and water can be incorporated with it in almost any proportion. Eucerin is met with in two forms—eucerinum anhydricum and eucerinum cum aquâ. The former is especially suitable when it is desired to incorporate with an ointment medicaments in aqueous solutions: the latter is preferable for ointments or pastes, which are to be prepared with pulverulent substances insoluble in water. Both are perfectly neutral, keep admirably, and are not affected by acids or bases. Sometimes it will be found advantageous to combine a little of a pure oil with the eucerin c. aquâ, such as sesame or olive or almond oil. In this way a bland, soothing and healing salve is obtained. Hebra was aware that an ointment must be aseptic, though he wrote long before Listerian days. His famous unguentum diachylı was compounded by boiling litharge and olive oil together in the presence of water. Kaposi simplified this in his unguentum vaselini plumbicum, made by melting together equal parts of lead plaster and vaseline. Both ointments were thus sterilised by the heat. They are still among our most

valuable appliances in eczemas of moderately limited dimensions, used spread thickly on linen, though they can also be smeared on, if this method is better adapted to the particular case. Another most useful ointment in local eczemas is Lassar's paste, which in its original form did not contain salicylic acid. The ordinary formula contains equal parts of zinc oxide, starch, lanoline and vaseline, and these to produce a smooth paste must be long and carefully rubbed up in a mortar. Two parts of zinc oxide and starch and four of eucerin c. aquâ, make a paste as good if not better.

In eczemas which are not secreting much moisture, the glycerine jelly of Unna is often appropriate. The best formula runs as follows:—℞ gelatinæ, 15·0; zinci oxidi, 10·0 to 15·0; glycerini, 30·0; aquæ, 40·0. The jelly should be dispensed in a deep tin so as to permit its being readily melted by being put into hot water when about to be used. After the liquefied jelly is painted on, a thin film of absorbent wool is dabbed over. If there is slight oozing from the eczematous surface and one wishes to employ the glycerine jelly, there are two procedures available. One is to dust over the surface, using a camel's-hair pencil for the purpose, a little powdered tannin or tannoform, taking care that only a very little is used. When the jelly is subsequently put on, the powder is dissolved in the moisture secreted, permeates the jelly, and renders it insoluble. The other is to paint the eczematous area with a solution of nitrate of silver—ten grains dissolved in an ounce of sweet spirits of nitre. This causes slight smarting. When it has dried then paint on the jelly.

Tar is a remedy which dermatologists are somewhat afraid of, as it may light up a quiescent eczema and induce an acute outbreak. But pure undiluted coal tar (pix carbonis) can in many cases of thoroughly dry eczema be painted on thinly, not only without occasioning irritation, but with great benefit. I have had the pleasure of seeing instances of this in Dr. Norman Walker's wards. The disadvantage is that it stains the skin black and it cannot readily be removed; it must be left to separate spontaneously.

But the aspirations of Dind of Lausanne and Brocq of Paris were more ambitious. They suggested crude coal tar as a means of checking the oozing in moist eczemas, of moderating the hyperæmia in inflamed ones. In the majority of cases pix carbonis is well borne, and the desired end is thereby attained. Quite recently, however, Brocq has found it necessary to modify his

conclusions somewhat. He observes: "It is certain that of all the actual topical applications known which may be employed to dry up rapidly a vesicular eczema, or even an oozing seborrhoeic dermatitis, crude coal tar is that which appears to be best tolerated by the great mass of patients. Nevertheless there are exceptions which should be recognised, since, in practice, as soon as one observes by particular indications that the skin is intolerant to coal tar, its further use should be at once suspended." In some rare instances crude coal tar can cause blisters, more or less voluminous, to appear. He has seen these specially in cases of eczema of the limbs, and there chiefly on the lower part. As a result of the application of zinc pastes containing coal tar in varying proportions, he has noticed an intense redness of the skin, a somewhat dusky redness, supervene. This only comes on after several days' use of the preparation, and if this is further persisted in, blisters may form. The most characteristic eruption, however, is constituted by elevations of the epidermis containing a yellow serosity, which only slowly heal after their subsidence. This effect is not due to any impurity of the tar, for it has occurred from well-washed tar, which has caused no irritation to other patients treated with it in the same way. It is really a question of individual tolerance. In using coal tar, therefore, the case itself and the degree of sensitiveness of the patient's skin are to be carefully estimated before having recourse to it. The tar should at first only be applied to limited areas, should not be repeated at too frequent intervals, while if any redness manifests itself its further use should be abandoned.

I have thought it desirable to go pretty fully into this question, as this method of dealing with weeping eczemas is bound to attract attention and to be extensively tried.

Widespread eczemas can hardly be treated satisfactorily unless the patient is confined to bed. If much oozing, a dusting powder of talc with ten grains of boric acid to the ounce should be freely applied, the bowels kept open and a mild, unstimulating diet prescribed. Frequently Bulkley's diet, consisting of rice, bread and butter, and water, proves most suitable. Lotions may replace powders in some cases such as R zinci carbonatis, cretæ precipitatæ, āā ʒij; glycerini, ʒij; acidi borici, ʒj; liq. calcis ad ʒviij. Should the eczema be very dry, then a better one is R bismuthi oxychloridi, ʒij; cretæ præparatæ, ʒij; ol. olivæ, ʒj; liq. calcis ad ʒviij.

Preparations of arsenic ought never to be prescribed in eczema.

There is a prevalent idea that arsenic is somehow good for the skin. There are indeed certain diseases of the skin which are benefited by arsenic, but eczema is not one. Small doses of the vinum antimoniale are valuable in acute generalised eczema. In young anæmic individuals iron judiciously administered is indirectly advantageous.

Some reference ought here to be made as to the value of our native spas in the treatment of eczema. Practically the only available curative resorts for balneotherapy are three—Bath, Harrogate, and Strathpeffer. Of these Bath is certainly the preferable one. The radioactivity of the water or the presence of free nitrogen may or may not exert a healing influence, but the water is plentiful, can be employed at any degree of temperature which is wished, and it is quite non-irritating. The use of the Bath waters is undoubtedly productive of benefit in many cases of chronic eczema. At Harrogate only examples of eczema in plethoric individuals are likely to derive advantage from drinking the purgative spring; the ferruginous one is not always well borne even by the anæmic. The sulphur springs contain a considerable quantity of chloride of sodium, and therefore may prove harmful to a delicate or inflamed skin when immersion is adopted. Harrogate stands high, and its atmosphere is apt to be chilly, while the town itself is now a large one. The waters are cold and require to be artificially heated before being used for baths. I have known of positive harm being done to cases of eczema at Harrogate. The valley in which the Strathpeffer springs rise is a charming and well-sheltered one. The rest to mind and body afforded there, the pure and temperate climate, coupled with a judicious use of the drinking water at the well, are all calculated to promote convalescence.

Reference.—*Ann. de dermatol. et de Syphiligraphie*, June 1913.

PERFORATED DUODENAL ULCER: *A Collective Report on a Series of* 200 *Cases of Perforated Duodenal Ulcer treated in Edinburgh between* 1896 *and* 1912. *Compiled from Data furnished by* F. M. Caird, J. M. Cotterill, C. W. Cathcart, Alexis Thomson, James Hodsdon, David Wallace, H. J. Stiles, Alexander Miles, J. W. Dowden, A. A. Scot-Skirving, W. J. Stuart, J. W. Struthers, George L. Chiene, H. Wade, E. Scott Carmichael, D. P. D. Wilkie, Lewis Beesly, and Cuthbert Paul.

In response to a suggestion that it might be of interest to investigate all the cases of perforated duodenal ulcer which have been observed and treated in Edinburgh within recent years, a small committee * was formed to collect and study the available records, and the following report embodies the results of the inquiry.

It was hoped that the study of a large number of cases, occurring in the practices of a number of surgeons, would bring out the salient features of the condition in truer proportion to each other than the records of individual surgeons, dealing with a relatively small number of cases, could do, and that thereby valuable information might be gained. All the surgeons in Edinburgh who have had experience of the condition have kindly put their records at the disposal of the committee, with the result that all cases occurring between 1896 and 1912, 200 in number, have been collected and analysed.

In presenting the report no attempt has been made to give a detailed systematic account of the symptoms, signs, and treatment of perforated duodenal ulcer. The intention has rather been to emphasise the relative frequency and importance of the usual features of the condition, to draw attention to the number and characters of atypical cases, to show how favourable results usually follow the early application of surgical treatment, while delay almost invariably means disaster, and to bring out the points of importance as regards the operative treatment actually carried out. The number of cases at the disposal of the committee has allowed fairly definite conclusions to be arrived at along these lines.

Recent Increase in the Number of Cases.—Before proceeding to analyse the case reports it is of interest to note the remarkable

* The committee consisted of Professor Caird (convener), Messrs. J. W. Struthers, W. J. Stuart, D. P. D. Wilkie, and the Editors.

increase in the number of cases coming under observation in recent years. Thus, in the first 7 years of the period under review, from 1896 till 1902, only 12 cases were recorded; during the next 5 years 43 cases were treated; while in the last five years, from 1908 till 1912, 145 cases were operated on. It was thought

Table I.

1896-1902.	1903-1907.	1908-1912.
12 cases.	43 cases.	145 cases.

at first that this might be at least partly explained by cases having been classed as perforated gastric ulcers at a time when the frequency of duodenal ulcer was not fully recognised. The difficulty in distinguishing the exact relation of a perforation to the pylorus on the operating table is well known, and it seemed possible that cases of duodenal ulcer might have been classed as gastric ulcer. Examination of the figures of cases treated in the Royal Infirmary does not, however, bear out this view, for in the years 1910, 1911, and 1912, which showed a very marked increase in the number of duodenal perforations, there was no corresponding decrease in the number of gastric perforations, the number of these coming for treatment being well up to the average for former years. We have no reason to suppose that the incidence of duodenal ulcer and its perforation have increased in recent years, and it must be admitted that in all probability some cases passed unrecognised.

In the last 5-year period 145 cases were recorded, *i.e.*, an average of twenty-nine cases a year. These came from Edinburgh, Leith, and the surrounding district, with a population which we may estimate roughly at half a million. From this a rough idea of the actual incidence of perforated duodenal ulcer may be gained, and no surprise need be felt that such a rare condition was occasionally overlooked at a time when the actual existence of the condition was only beginning to be recognised.

Method of Investigation.—In making the inquiry the committee adopted the plan of drawing up a schedule (p. 407) on which each case could be fully abstracted. These schedules were filled up by the operator in each case, and were then analysed and tabulated by the committee. In this way the work of investigation was very much facilitated and information on definite points was readily obtained with greater accuracy than could have been attained had the committee attempted to analyse the original case records. In what follows the headings are taken mainly from those tabulated in the schedules.

Schedule. Inquiry *re* Perforated Duodenal Ulcer.

	Clinical Features of Perforation.	Operation.	Result.
Date of operation.	*Pain* at onset. Severity. Site of maximum. Radiation. Duration.	Time since perforation.	*Recovery.*
Name or initials. Sex. Age.	*Pain* when seen by surgeon. Severity. Site of maximum.	Anæsthetic used.	Date of last report.
Occupation.	Temperature when first seen.	Nature of fluid in abdomen. Distribution of. Amount of. Food matter.	Source of information.
Length of journey and means of transport to hospital.	Pulse when first seen.	*Ulcer*— Site of. Size of.	Condition then as to indigestion.
History of indigestion. Duration. 1. Marked. (Detail symptoms.) 2. Slight. (Detail symptoms.) 3. None.	Respiration when first seen.	*Perforation*— Site of. Size of.	Condition then as to pyloric obstruction.
Was *Ulcer* diagnosed, and when?	*Vomiting*— Time. Severity. Material. Blood.	Evidence of other ulcers.	*Any subsequent treatment necessary*— Medical. Surgical.
Hæmatemesis.	*Tenderness*— Site of maximum.	Adhesions.	*Fatal.*
Melæna.	*Rigidity*— Site of maximum.	*Method of dealing with perforation.* Suture alone. Effect on calibre of duodenum. Suture with omental graft. Excision of ulcer. Pyloroplasty.	Time of death after operation.
Signs premonitory of perforation.	*Liver Dulness*— Present. Diminished. Lost.	Gastro-enterostomy. Why done?	Cause of death.
Possible factors determining perforation.	*Tympanitis.*	*Means of cleansing peritoneum.*	P. M. Report.
Relation to last meal.	*Blood Examination.*	Drainage— Site. Duration.	*Operator's Remarks.*
Any other important facts antecedent to perforation.	*Shock*— Intensity. Duration.	Convalescence.	*Committee's Remarks.*
Food or medicine taken after perforation.	*Reaction period*— Time of onset. Duration.	Healing of wound.	
Was morphia given after perforation?	*General condition of patient before operation*— Hopeful. Grave. Moribund.	Post-operative complications.	
	Diagnosis when first seen.	Any other important facts regarding operation or convalescence.	
	Diagnosis immediately before operation.		

Sex and Age Incidence.—Of the 200 cases, 179 were males, 21 were females, a ratio of 8·5 males to 1 female. Except for the fact that men are so much more often affected than women, the records show no differences of note in the condition as it affects the two sexes. The history given of indigestion previous to perforation, the features attending perforation, and the results of treatment, were precisely similar, and no facts emerged in any way explaining the relative infrequency of perforated duodenal ulcer in women.

TABLE II.

11	patients	were	under	20	years	of age.
47	,,	,,	between	20	and 30	years of age.
47	,,	,,	,,	30	and 40	,, ,,
44	,,	,,	,,	40	and 50	,, ,,
34	,,	,,	,,	50	and 60	,, ,,
15	,,	,,	,,	60	and 70	,, ,,

The youngest patient treated was a boy of 14, the oldest a man of 69. The main incidence of the affection was between the 20th and 50th years; 47 cases occurred between 20 and 30; 47 cases between 30 and 40; and 44 cases between 40 and 50. As there were 11 patients under 20, 34 patients between 50 and 60, and 15 patients between 60 and 69, the disease is by no means rare in the young and elderly. A striking feature noted with regard to age incidence was that in patients under 30 there was a marked absence of a history of severe indigestion before perforation. Whether this is due to the fact that young people are apt to note their symptoms less accurately and to pay less attention to them than older subjects, or that ulcer in young subjects is prone to perforate rapidly after it begins, cannot be accurately determined from the data at our disposal. The important point to bear in mind is that it is quite common to meet with cases of duodenal perforation in young patients who give no history of painful dyspepsia previous to the onset of the acute illness associated with perforation. This feature is also, though distinctly more rarely, met with in elderly people.

Occupations of Patients.—Examination of the occupations of the patients in the record shows that they were of the most varied description. Manual workers indoors and out of doors, those living active and sedentary lives, dwellers in town and country, were all represented in the list, and it seemed quite clear that a patient's vocation had no influence whatever in determining the incidence of ulceration or the occurrence of perforation. This is a point of some importance as bearing on possible claims

for compensation under the Workmen's Compensation Act, and will be referred to again.

Clinical Features.

History of Indigestion Previous to Perforation.—The symptoms associated with duodenal ulcer are so often marked and characteristic that great stress is naturally laid on the presence of a characteristic history as an aid to diagnosis in cases of possible perforation peritonitis. In analysing our cases we find considerable variations in the nature of the histories recorded, and in drawing conclusions or inferences from such cases it must be borne in mind that the histories were elicited from patients suffering from a severe illness, usually attended with violent pain, who could not be closely cross-questioned or be expected to recount their previous symptoms with perfect accuracy.

Inquiry was made in the schedule as to whether a history of previous indigestion was obtained or not; whether any previous symptoms were marked or slight, and what the individual symptoms were. The information obtained allowed of a division of the cases into three groups—those in which there had been no previous symptoms at all, those in which the symptoms had been slight and indefinite and apparently not specially characteristic of duodenal ulcer, and those in which the previous symptoms had been

Table III.

Previous History of Indigestion or Duodenal Ulcer.

None.	Slight.	Well marked.	Insufficient Data.
17.	55.	90.	38.

well marked and suggestive of the presence of ulcer. There were 17 cases in group 1. That is to say, in nearly 10 per cent. of the total number of cases recorded there had been no symptoms sufficient to attract the patient's attention before the occurrence of perforation. In group 2, with slight indefinite symptoms, there were 55 cases. While it is evident, bearing in mind the conditions under which these histories were obtained, that too much stress must not be laid on their value, it seems legitimate to suggest that they are evidence in support of the view that duodenal ulcer may be present without giving rise to any very characteristic symptoms. Examination of the records did not show that there was anything revealed at operation in these cases to distinguish them from cases in which a characteristic history suggestive of ulcer

had been present. Here again, however, too much stress cannot be laid on the information given, for a careful systematic examination of the duodenum cannot be made in the course of an operation for perforation, and the changes in the duodenal wall round a perforation, owing to the prompt inflammatory reaction which occurs, probably mask to a considerable extent the condition present before perforation occurred. In group 3, with well-marked symptoms previous to perforation, there were 90 cases, while in 38 cases the information given did not allow of the cases being definitely grouped. It was noteworthy that in the majority of cases giving a definite history of dyspepsia, the symptoms had been present for a year or more before perforation occurred.

Premonitory Signs of Perforation and Factors Determining its Occurrence.—Inquiry under this head elicited the fact that there is apparently no sign or symptom which gives warning that perforation may be imminent. We found no record of anything which could be regarded as a premonitory sign, and similarly it was found impossible to conclude that there were any noteworthy factors determining the occurrence of perforation. In one or two cases, strenuous physical exertion immediately preceded the onset of symptoms, but such cases were so few that it seemed impossible to determine any definite relation between physical exertion and the perforation of an ulcer. It would seem therefore justifiable to state that manual workers suffering from duodenal ulcer are not specially liable to perforation, and that perforation occurring in a manual worker cannot fairly be ascribed to the nature of his or her occupation. As noted above, this is of importance from the point of view of claims for compensation by working men.

A question was asked in the schedule as to the relation of the time of onset of symptoms to the last meal, and from the answers given it seemed that there was a tendency for perforation to take place about 1½-3 hours after the ingestion of food, *i.e.*, at the time when the pain of duodenal ulcer tends to be most acute.

Signs and Symptoms following Perforation.—Of the signs and symptoms following perforation, pain is, as is well brought out by the records, the most characteristic. It was present in all the cases, and this regularity of method of onset is of great value as a diagnostic feature in distinguishing perforation of an ulcer from appendicitis, the condition with which duodenal perforation was in our cases most often confused. A patient with a duodenal perforation is felled at once by agonising pain, while the pain of

appendicitis begins more moderately, and gradually increases to a maximum reached some time after its onset.

Site of Pain.—In the great majority of cases the pain was felt most severely above the umbilicus, and in rather more than half of these it was described as being worst to the right of the middle line. It should be noted, however, that in 8 cases pain was felt most severely, at its onset, in the right iliac region, while in 6 cases it was described in general terms as being worst in the lower abdomen. No explanation of these exceptional occurrences was forthcoming, and no great stress need be attached to them, except in so far as they indicate that there are occasional departures from the typical history as regards the initial site of the pain. In answer to a query as to radiation of pain in any special direction, it was stated in 7 cases that the pain shot through to the back, below the right shoulder, thus resembling the pain of gall-bladder affections. Otherwise there was no note of any definite radiation of the pain from its site of onset.

Vomiting.—In 88 cases vomiting occurred soon after perforation, while in 53 cases it was definitely stated not to have occurred. Most frequently the vomiting took place once or twice shortly after perforation, and did not recur, and no diagnostic or prognostic significance could be attached to its occurrence in this manner. Severe and frequent vomiting was noted in some cases, and analysis of the ultimate results showed that this was a grave symptom, as also was the rare occurrence of hæmatemesis. Perhaps the most interesting finding in connection with the occurrence of vomiting was that it bore no relation to the presence of food material in the peritoneal cavity. Food material, recognisable as such, was very rarely found on opening the abdomen, and not more often in cases attended by vomiting than in those in which no vomiting had taken place.

Febrile Reaction after Perforation.—Little of note was elicited in analysing the records of pulse-rate and temperature. The absence of a marked febrile reaction in the early stages after perforation was the rule in the great majority of cases, helping to distinguish the condition from others of a more decidedly infective nature, such as appendicitis. In a certain number of cases, however, while the temperature was subnormal the pulse-rate was comparatively high, and examination of the results revealed that this was usually of grave import. A subnormal temperature with a pulse-rate over 110 should be regarded as an ominous sign at any stage after perforation.

Examination of Abdomen ; Site of Maximum Tenderness.—It was noted above, in discussing the location of the subjective pain, that in a slight majority of cases it was felt to the right of the middle line. The records show that the site of maximum *tenderness* is more often an accurate guide to the location of the lesion, for in the great majority of cases it was found to be over the upper half of the right rectus muscle. In 14 of the 200 cases, however, it was definitely stated that the maximum tenderness was not in the usual situation. In 2 of these it was in the left epigastric region, in 11 in the right iliac region, and in 1 in the right loin.

Site of Maximum Muscular Resistance.—Variations in the degree of muscular resistance are not easily appreciated in a condition which usually involves the greater part of the peritoneal cavity by the time it comes under observation, and consequently it was found that the attempt to ascertain the site of maximum resistance gave little information. The general conclusion arrived at was that while the resistance tended to be more marked in the right side of the abdomen, especially in cases seen early, it was in approximately half the cases generalised over the abdominal wall.

Modification of the Liver Dulness. — Considerable interest attaches to the frequency of modifications of the liver dulness. In 147 cases definite information was given on this point, and it was found that liver dulness was absent in 43 cases, *i.e.*, in rather less than one-third. It was distinctly diminished in 46, and was unaffected in 58. From these figures it is clear that while modification of the liver dulness was present often enough to be frequently of value as a diagnostic sign, the absence of any change cannot be relied on as valid evidence against the possibility of perforation.

The Influence of Morphia on Signs and Symptoms.—Various opinions have been expressed from time to time as to the value or otherwise of the administration of morphia in cases of perforation. In a large number of the cases investigated morphia had been given, and with the exception of a few in which the symptoms were masked by the relief following the administration of morphia, so that operation was dangerously delayed, the ultimate results were rather better in the cases in which morphia had been given than in those in which it had been withheld. It would appear, therefore, that morphia may be given with advantage and certainly without fear of doing harm, once the diagnosis has been made and operation been decided on.

Abatement of Symptoms resulting in a "Reaction Period."—As was pointed out some years ago by Miles, a definite reaction sets in in some cases a few hours after perforation, characterised by abatement of pain and shock, and general improvement so marked as to throw doubt on the accuracy of the diagnosis. Information was asked in the schedule of inquiry on this point, and it was found that 43 cases showed this feature and that it was independent of the administration of a sedative. Whatever the explanation of its appearance may be, the figures show that this reaction period is a possibility to be reckoned with in a considerable number of cases, amounting in the present series to about 20 per cent. Our information was not full enough to allow us to ascertain exactly the actual causes of the reaction. Sealing of a perforation by omentum or by lymphy exudate or by adhesion to surrounding parts, and dilution of the acrid fluid escaping from the duodenum by peritoneal exudate, suggest themselves as possible explanations. It is important to note that in some cases this reaction was so marked, and attended by a feeling of such comparative wellbeing in the patient, as to make him unwilling to submit to operation.

Operation.

Anæsthetic.—In the majority of cases chloroform alone, or chloroform followed by ether, was the anæsthetic employed. In a few cases ether alone was used, and in one instance the operation (which included a gastro-enterostomy) was successfully conducted under local anæsthesia. The rapid and complete relaxation obtained with chloroform anæsthesia, and the consequent gain in speed and in access to the perforation, would appear to more than counterbalance the risks peculiar to this drug. It should be stated, however, that in one case in which chloroform was used the patient died some days later with symptoms of acetonæmia.

Nature of Fluid in Abdomen.—In the vast majority of cases this consisted almost entirely of turbid peritoneal exudate. In only 6 cases was food matter found in the exudate. In 22 cases the fluid was definitely bilious in character, and of these, 14 were fatal. This high mortality, which in this series is not to be explained by the time factor, is probably due to the fact that the presence of quantities of bile in the exudate is associated with a large perforation with free leakage. In regard to the amount of fluid, it was found that little prognostic significance attached to it, except that in cases where the abdomen was described as "bursting with fluid" the issue was usually grave.

In practically every case it was noted that the fluid tended to accumulate in the right kidney pouch and in the pelvis, especially in the latter, and in a few cases it was confined to these two situations.

Site of Perforation.—This was located in the first part of the duodenum in practically every case; in only one case was the perforation found in the second part.

Of 120 cases in which the exact position of the perforation was described, it was situated on the anterior surface, within $1\frac{1}{4}$ inches of the pylorus in 101, on the superior surface in 13, on the posterior surface in 4. In one case in which at operation a perforation at the upper part on the anterior surface was closed and in which the patient died, a second perforation on the posterior surface was found post-mortem. In this case a large horseshoe-shaped ulcer, encircling the upper part of the duodenum, had given way in two places.

In size the perforations varied from a minute hole to a tear large enough to admit the tip of the finger.

As might be expected, the prognosis is distinctly more grave with large perforations than with small.

The size and character of the ulcer varied within very wide limits, and whilst in a fair number it was small, and possibly of recent origin, in the majority of cases it was of some size and appeared to be of the chronic type.

Method of Dealing with Perforation.—Suture, alone or reinforced by an omental graft, was the method almost universally adopted. In 4 cases, however, excision of the ulcer combined with pyloroplasty was carried out. In 3 cases in which the perforation could not be closed, but the sub-hepatic space was drained, death followed continued leakage.

Gastro-enterostomy.—An immediate gastro-enterostomy was performed in 88 cases. In 39 of these it was obligatory, the closure of the perforation having narrowed the lumen of the duodenum to such a degree as to threaten its permeability for the passage of food. In the remaining 49 cases gastro-enterostomy was performed with a view to curing the ulcer because the patients' general condition after suture of the perforation was good. In the latter group there were 3 fatalities; in the former 22.

Cleansing of Peritoneal Cavity.—The abdomen was douched out with warm saline solution in 102 cases, and of these patients 54 recovered, 48 died. In 54 cases the exudate was merely swabbed out, and of these 45 recovered, 9 died. In 6 cases the exudate was left *in situ* with 3 recoveries and 3 deaths.

In regard to these figures it should be noted, however, that the cases in which lavage was employed were on the whole later and more severe in type than the others. On the other hand, the figures show that swabbing out is an effective method of dealing with the exudate.

Drainage.—In the great majority of cases a pelvic drain was employed for the first day or two following operation. Drainage through the upper wound was employed in many of the earlier cases, but latterly was almost entirely abandoned. A small drain for the abdominal wall was, however, used in some cases.

Post-operative Complications.

The most frequent complication met with after operation was some respiratory trouble, varying from a slight *bronchitis* to a definite *pneumonia* or *empyema*. Such respiratory complications were noted in 17 cases.

Subphrenic abscess developed in 5 cases. The physical signs of this complication usually became evident during the second week following operation.

Parotitis was met with in 3 cases. *Post-operative hæmatemesis* was noted in 4 cases.

A *duodenal fistula* developed in the 3 cases in which the perforation was not closed at the time of operation. All 3 cases died within a few days with rapid emaciation and asthenia, illustrating how imperative it is that the perforation be closed in one way or another at the operation.

Immediate Results.

In the series of 200 cases it is found that 121 recovered and 79 died. Examining the figures for the three quinquennial periods over which these statistics extend it is seen that during the years 1897-1902 there were 12 cases with 5 recoveries and 7 deaths; during the period 1903-1907 there were 43 cases with 22 recoveries and 21 deaths; whilst during the final period 1907-1912 there were 145 cases with 94 recoveries and 51 deaths.

Table IV.

	1897-1902.	1903-1907.	1908-1912.
Recoveries . .	5	22	94
Fatal . . .	7	21	51
Total . . .	12	43	145

TABLE V.

PERIOD WHICH ELAPSED BETWEEN PERFORATION OF THE ULCER AND OPERATION.

A. *In Cases which Recovered* = 119.

Hours – 3	3-6	6-9	9-12	12-15	15-18	18-21	21-24	+24
10	30	31	16	8	6	4	4	10

B. *In Fatal cases* = 77.

Hours – 3	3-6	6-9	9-12	12-15	15-18	18-21	21-24	+24
3	7	8	11	3	6	9	9	21

Table V. shows the number of hours which elapsed between the occurrence of perforation and operation. So far as our data permitted of this being determined, it will be seen that 87 of the 119 cases which recovered were operated upon within 12 hours of perforation, while of those operated upon later, only 32 recovered. That 10 of these patients recovered after more than 24 hours had elapsed before operation is partly explained by the fact that in several cases there was only a localised infection in the vicinity of the duodenum. Of the 77 fatal cases, only 29 were operated upon within 12 hours, and 48 after a longer interval.

The striking increase in the number of cases coming to operation and the improvement in results of late years can be explained largely, if not entirely, on the basis of improved diagnosis and earlier operations.

The figures emphasise in a striking manner the fact that the chief responsibility in these cases rests with the medical man who first sees the patient, and that on his diagnosis and prompt action the fate of the patient largely depends.

On the other hand, it must be recognised that there are a certain limited number of cases in which from the outset the issue is grave, and in which even early operation fails to save the patient.

Table VI. shows the number of operations performed in each year with the results, and the number of cases in which the operation was performed within 12 hours of perforation. It brings

out the interesting fact that the condition is being recognised by the practitioner at an earlier stage year by year, and that with earlier diagnosis and operation the mortality is steadily diminishing. Thus in 1912, 29 of the 30 cases which recovered were operated upon within 12 hours of perforation. Of the 11 fatal cases only 4 were operated upon early.

TABLE VI.

Year.	Number of Recoveries.	Number of Recoveries operated upon within 12 hours of Perforation.	Number of Fatal Cases.	Number of Fatal Cases operated upon within 12 hours of Perforation.	Total Number of Cases.	Total Number of cases operated upon within 12 hours of Perforation.
1896	1	0	1	1	2	1
1897	0	0	1	0	1	0
1898	1	1	0	0	1	1
1899	0	0	0	0	0	0
1900	1	0	3	0	4	0
1901	1	0	2	0	3	0
1902	0	0	1	0	1	0
1903	2	2	4	2	6	4
1904	2	1	3	1	5	2
1905	9	5	6	4	15	9
1906	2	1	1	1	3	2
1907	7	3	7	1	14	4
1908	10	8	8	2	18	10
1909	14	10	8	3	22	13
1910	21	13	11	5	32	18
1911	18	14	10	5	28	19
1912	30	29	11	4	41	33

Subsequent History.—In examining the ultimate results in the cases in which recovery took place, it was found convenient to group the cases into the three periods mentioned at the beginning of the report, *i.e.*, those treated between 1896-1902, those between 1902-1906, and those between 1906-1912, because the treatment carried out in the three periods varied in some respects, notably as regards the practice of doing a primary gastro-enterostomy at the operation for closure of the perforation.

Thus in the *first* series of 12 cases, gastro-enterostomy was not done at all. Of the 5 patients who recovered, one died 3 months later from pneumonia, and one was lost sight of. Two were in perfect health when heard of 5 and 11 years after operation. One came under observation again 11 years after operation, for recurrence of dyspeptic symptoms, and required a gastro-enterostomy for their relief.

In the *second* series, the practice of doing a primary gastro-

enterostomy was coming into vogue, although not to any great extent, and accordingly we found eight cases of primary gastro-enterostomy in this series. Five of these recovered and four remained in good health, while the fifth was lost sight of. Of the remaining recoveries—17 in number—4 had been treated with pyloroplasty and were well when heard of 5 years or more after operation. Of 13 treated by suture alone, 5 were known to be in excellent health five to eleven years after operation, while 4 were known to suffer from dyspepsia with symptoms suggesting pyloric stenosis. Two of these consented to further operative treatment by gastro-enterostomy, while two were not operated on. The remaining four patients were lost sight of.

In the *third* series of cases, out of 94 recoveries, 75 were traced for varying periods, some for as long as five years, but many only for short periods of six to eighteen months or two years; 54 of the 75 were in good health, 42 after primary gastro-enterostomy, 2 after pyloroplasty, 10 after suture alone; 21 suffered from indigestion; 5 of these had had primary gastro-enterostomy, 2 had been treated by pyloroplasty, and 14 by suture alone. Five of these patients required a secondary gastro-enterostomy.

As will readily be understood, it was not possible to arrive at perfectly definite conclusions from these facts. The length of time which had elapsed since the majority of cases in the third series had been treated was not long enough nor was the material sufficient to enable a dogmatic statement to be made about the necessity for a primary gastro-enterostomy.

Adding the available material in the three series together, we found that out of 40 cases treated by suture alone, 19 suffered later from dyspepsia and 8 of these were treated by secondary gastro-enterostomy, while out of 52 cases treated by primary gastro-enterostomy 5 suffered later from dyspepsia. These figures certainly suggest that a primary gastro-enterostomy was of advantage in warding off subsequent digestive trouble. On the other hand, there was no evidence in the records to show that the omission of gastro-enterostomy was the cause of death in any of the fatal cases, or seriously interfered with the immediate recovery of the patients.

While, therefore, the evidence at our disposal tended to show that primary gastro-enterostomy was well tolerated and was probably useful in promoting complete and permanent recovery, we feel that more information is required before the indications for its performance in operating for perforated duodenal ulcer can be confidently stated.

OPERATIONS FOR HARE-LIP IN THE OUT-PATIENT DEPARTMENT.

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OPERATIONS for hare-lip are, of course, common in the out-patient department. The mortality rate is, as in the wards, remarkably low. Even in "alveolar" cases and cases complicated by cleft palate, in both of which the intermaxillary bone has to be cut and wired in position as a preliminary to the hare-lip operation proper, a fatality is exceptional. Hare-lips after operation almost invariably heal by first intention, and the immediate cosmetic result is usually good. The serious factor in hare-lip operations is the subsequent contraction of the scar tissue. Inevitable in all, it leads in a number of cases to flat nostril, notched lip, or asymmetrical mouth, deformities which may demand secondary operations. In private practice or in the wards it is possible to keep a case under observation for several weeks till contraction is completed. In the out-patient department this is not always possible, and the surgeon operates with the knowledge that whatever primary result he obtains may be accepted by the parents and become the permanent and often by no means "finished" effect. Every now and then parents refuse to have the lip touched after the sutures are removed on the fourth day, and the better the primary result the more likely the reluctance to have anything more done; also, unfortunately, in many cases the greater the tendency to secondary deformities due to cicatricial contraction, for the pretty primary result is often obtained by extensive "freeing" of lip, cheek, and ala, and the greater the primary freeing of these parts the more extensive the raw surface left, and the greater the subsequent contraction.

It is in the unilateral cases that the effects of scar contraction are most troublesome. Bilateral hare-lip presents a comparatively simple problem. In the avoiding of flat nostril, notched lip, and asymmetrical mouth in unilateral hare-lip, experience has led me to adopt five lines of procedure which are more or less opposed to much of the current teaching on the subject. They may be briefly stated as follows:—

Over-tilting of the Intermaxillary in Alveolar Cases.—In the preliminary cutting and wiring of the intermaxillary, that process is so pared, manipulated, and wired that the tip of the nose and the nasal septum are distinctly displaced to the deformed side—

that is to say, the flattening of the nostril is partly remedied by pulling the nasal tip to the ala instead of being entirely remedied by lifting the ala towards the tip and septum of the nose. The latter procedure demands extensive under-freeing of ala and cheek, with inevitable subsequent contraction of the raw surface created and resulting flattening out of the nostril.

Tension.—The majority of current writers lay stress on the avoidance of tension by free elevation of ala, lip, and cheek by undercutting. A not inconsiderable experience has driven me into the opposite camp of the small minority who hold that a moderate degree of tension is the lesser evil. Sutures properly placed and tied will stand a good deal of tension without giving or cutting; and a lip which looks in the first instance taut and strained will ease off wonderfully in a few weeks. On the other hand, the extensive undercutting necessary to obtain an ideal degree of primary relaxation produces necessarily much scar contraction, with resulting secondary distortion.

Tin-foil Plating.—In cases in which extensive elevation of ala and lip are unfortunately necessary, secondary contraction with adhesion to the underlying bone may be avoided by the insertion of tin-foil between the soft parts and the periosteum. Figs. 1 and 2 (drawn for me by Mr. Maxwell from cases under operation) sufficiently clearly indicate the procedure. Mucous membrane or mucous epithelium soon lines the raw tissues opposed to the surfaces of the plate, so that these do not adhere when the plate is withdrawn, but form a part of the buccal cavity.

Median Position of Prolabial Juncture.—This is indicated in Figs. 2 and 4. Secondary cicatricial contraction tends to produce a notch in the prolabium. Placed laterally, this is often very unsightly. In the middle line it is always much less so, and in some cases is even "rather becoming." Only those methods of paring the flaps which provide for median juncture should be adopted.

Nostril Moulding (Figs. 3 and 4).—A specially made oval tube or an ordinary vulcanite, celluloid, or metal oval nasal splint for deflected septum, such as Asch's, Meyer's, or Kyle's, has a really remarkable effect in moulding the deformed nostril and preventing secondary flattening. It may be introduced at the time of the operation, or during the operation the closure of the nostril may be purposely overdone and the splint introduced at the end of two or three weeks. In either case the shape

FIG. 1.—TIN-FOIL PLATING IN HARE-LIP OPERATIONS.

The lip has been pared, and lip, ala, and cheek freed; and the parts are ready for suture. A plate of tin-foil, *X*, moulded to the bone has been fixed by two silkworm sutures, *a* and *a*, which perforate tin-plate and alveolar process.
(N.B.—The coronaries are temporarily controlled by the artery forceps. Pressure forceps and ligatures are never necessary in hare-lip operations.)

FIG. 2.—TIN-FOIL PLATING IN HARE-LIP OPERATIONS.

Operation completed. The dotted line indicates the position of the plate (which is left for four to eight weeks), and bounds an area larger than the mucous-membrane-lined recess left after removal of the plate. A certain amount of reduction by contraction necessarily occurs.

FIG. 3.—NOSTRIL MOULDING IN HARE-LIP OPERATIONS.

Flat nostril, with long diameter transverse.

FIG. 4.—NOSTRIL MOULDING IN HARE-LIP OPERATIONS.

Nasal splint fixed in position by silkworm suture passed through septum, and tied in other nostril (knot shown). In this case a round splint has been used (to match the normal nostril). More often an oval splint is employed, fixed with its long diameter antero-posterior. The splint is worn for one to three months.

(oval or round) and size of splint are judged by those of the normal nostril. Its position is settled by making its long diameter, if oval, correspond to the line of that of the normal nostril. This will necessarily be at right angles to the long diameter of the aperture of the flat malformed nostril. The expense of having these splints specially made of small size for hare-lip cases may be avoided by using nasal splints of the usual stock sizes and cutting them across with a fine file at the point of suitable circumference.

ON ELEPHANTIASIS NEUROMATOSA.

By NORMAN S. CARMICHAEL, M.B., F.R.C.P.

Cases of elephantiasis fall naturally into two groups—those of acquired and those of congenital origin.

The acquired form of the disease is almost entirely the result of mechanical obstruction to the flow through the lymph and blood-vessels, and does not come within the scope of this paper.

In July of this year I was called to see a child suffering from swelling of the right leg. On inquiring into the history, I discovered that in addition the mother was suffering from elephantiasis of both legs, and the child's eldest sister had a swelling of the groin. The following are the histories of the three cases.

Case 1.—Female, æt. 36 years; married; has three children aged respectively 4½ years, 2¼ years, and 18 months. There is nothing of note in her family history. Her previous personal history is entirely satisfactory. At the age of nine years she visited New York and resided there for about nine months; except on this occasion she has never been out of this country. The first indication that anything was wrong with her legs was noticed when she was about fifteen years of age. On one occasion when buying new boots she found the right boot tighter than the left. Gradually she noticed that she was unable to lace the boot on the right leg so closely as that on the left. Up to the time of her marriage, at the age of twenty-six, the swelling did not increase very much. The left leg was unaffected. Shortly before marriage she noticed a slight swelling in the region of the mons veneris. Soon after marriage the left leg began to swell, and the right one increased in size more rapidly. At the age of thirty-one her eldest child was born; after this the legs swelled more rapidly, and the tumour of the mons veneris increased in size. Her second and third pregnancies had little or no effect on the swellings. During the second pregnancy she had some ulceration of the right leg, which rapidly healed under treatment. She has suffered no pain, only inconvenience from the bulk and weight of the limbs.

Present State.—Patient looks healthy, and is a woman of average

intelligence. There are no swellings, scars, moles, or discolorations of the skin apart from those mentioned above.

Tumour in the Region of the Mons Veneris.—A mass about the size of a small cocoa-nut is seen lying over the front of the pubis. It is irregularly round in shape, the skin looks coarse, and the surface is uneven, like that of a "hob-nailed" liver. The tumour is quite painless to touch; the skin is firm and thickened and feels like morocco leather, and appears to form an integral part of the mass. The tumour can be moved up and and down, but does not move from side to side. It is not adherent to the underlying bone On each side of the tumour one can feel cord-like structures passing out and disappearing in the region of the external rings.

Right Leg.—The photographs give a good general idea of the appearance of the leg (Figs. 1 and 2). The swelling commences about the upper third of the thigh, but the disease tapers off imperceptibly into the healthy tissues. On the inner side of the knee there is a flabby mass, and hanging down below the calf is a pendulous mass separated from the limb by a deep furrow. The skin above the knee feels natural, but further down the limb it becomes harder and more indurated. It is sensitive to touch and painful stimulations. It does not pit upon pressure. There are 3 or 4 small nodules about the size of a walnut, which are much harder than the rest of the new growth, and are slightly raised above the surface. Two of these can be seen in Figs. 1 and 2.

Left Leg.—Shows similar appearances, but less advanced. The measurements of the two limbs are as follows:—

	Right.	Left.
Middle of thigh	21½ inches.	17 inches.
Knee	19 „	16½ „
Calf	23½ „	19½ „
Ankle	11½ „	9½ „

Case II.—D. H., æt. 4½, a healthy-looking, intelligent child. Father is a perfectly healthy man; her mother is afflicted as described above. The child has always enjoyed good health. About three months ago her mother noticed a fulness in the lower part of the abdomen when bathing the child. Since then it has grown slightly larger. It is painless. The skin is natural, and there is no impairment of sensibility to touch or pain. The swelling is situated just above the middle of Poupart's ligament, and at first glance resembles a bubonocele (Fig. 3). On closer examination it presents none of the classical signs of that condition. It is a diffuse elliptical swelling of a somewhat soft pulpy consistence and is ill defined, tapering off gradually at both ends into the healthy tissues. It is not fixed to the underlying tissues. The child has no moles, pigmentations, or swellings in other parts of her body.

FIG. 1.

Elephantiasis Neuromatosa, showing fibrous nodules in the lower third of the right leg.

FIG. 2.

Elephantiasis Neuromatosa, showing fibrous nodule on the inner aspect of the right leg.

FIG. 3.

Elephantiasis Neuromatosa, showing swelling in the left groin.

FIG. 4.

Elephantiasis Neuromatosa, showing enlargement of the right leg.

Case III.—M. H., æt. $2\frac{1}{2}$, a bright, happy child, was noticed about 4 months ago to have a swollen right leg and foot. It came on imperceptibly, and does not appear to have grown much larger since first noticed. The last two or three pairs of new shoes the child has had, have all had to be cut in front of the "upper" of the right foot to permit of the foot going forward into the shoe. The right leg is diffusely enlarged from the upper third of the thigh down to the toes (Fig. 4). The swelling is most noticeable below the knee. It is painless, and the child runs about in a most active manner, but rather tends to drag the right leg. The skin has lost its elasticity and is somewhat indurated, but does not pit on pressure. There are no swellings, pigmentation, or moles on other parts of the body. The measurements of the legs are as follows :—

	Right.	Left.
Thigh	$10\frac{1}{2}$ inches.	10 inches.
Calf	$8\frac{3}{4}$ „	8 „
Ankle	6 „	$5\frac{5}{8}$ „

These patients have not been exposed to filarial infection. Their blood was examined and nothing abnormal was found. There is nothing in the pelvis or abdomen to cause pressure on the blood or lymphatic vessels. These facts, in conjunction with the characteristic pachydermatocele of the "mons," the fibrous nodules in the legs of the adult patient, the changes in the skin, the early age of onset and mode of growth, and the hereditary taint in the children, point to it being a congenital rather than an acquired form of elephantiasis.

Virchow first threw light on the real nature of elephantiasis congenita. Classifying his cases according to their histological structure instead of their clinical appearance, he differentiated three groups: one in which the deformity arises as a result of a hyperplasia of the skin and subcutaneous fibrous tissue—"elephantiasis fibromatosa"; one in which it takes origin from the connective tissue of the vessels—"telangiectatic elephantiasis"; and a third where the nerves of the part give rise to the hyperplasia of fibrous tissue—"elephantiasis neuromatosa." Since Virchow's papers, other observers have recorded cases which serve to support his histological classification. Max Jordan reports two cases, in one of which the lesion involved chiefly the blood-vessels and vasa nervorum, and in the other the skin and subcutaneous fibrous tissue. The demonstration in 1882 of the nerve element in the cutaneous fibromata by v. Recklinghausen, and the same element in certain forms of elephantiasis by Czerny, Hürthle, and others, serves to link up elephantiasis neuromatosa with other

forms of neurofibromatosis. More recently in this country Alexis Thomson in his classical work on *Neuroma and Neurofibromatosis* has done much to unravel the mystery that obscured nerve tumours and overgrowth. I give his classification of neuroma, as it shows very clearly the relationship between elephantiasis neuromatosa and the other forms of connective-tissue overgrowth of nerve sheaths which so often occur in the same person.

- Neuroma
  - *True*
    - Neuroma verum
      - Myelinicum
      - amyelinicum
    - gangliocellulare
    - The occurrence of true neuroma in which ganglion cells are absent is doubtful.
  - *False*
    - (1) Circumscribed or solitary tumours, growing from the connective tissue of nerve trunks or of the ganglionic enlargements of nerves.
      - Innocent — Fibroma myxoma, etc., cysts from liquefaction of solid tumours (myxoma). The clinical type (painful subcutaneous tubercle is included here).
      - Malignant — Sarcoma, spindle-celled, fibro myxosarcoma; cysts from liquefaction of sarcoma.
    - (2) Diffuse overgrowths of the connective-tissue sheaths of nerves and of ganglionic enlargements of nerves. Neurofibromatosis.
      - Diffuse and generalised fibromatosis of trunks of nerves (multiple neuromata).
      - Plexiform neurofibromata.
      - Cutaneous neurofibromata.
      - Elephantiasis neuromatosa.
      - Pigmentation of the skin of nerve origin.
      - Secondary malignant neuroma, being the sarcomatous transformation of one or other of the above.
      - Various combinations of these.
    - (3) Traumatic or division neuromata.
    - (4) Enlargements of nerves in leprosy, syphilis, tuberculosis.

Characteristics of Elephantiasis Neuromatosa.—Of congenital origin, it frequently grows in relation to a pigmented or hairy mole; sometimes a molluscum fibrosum seems to be its starting-point. Often not apparent at birth, it shows its first signs in early infancy. There is no case reported commencing after puberty. It develops almost imperceptibly at first, growing *pari*

passe with the growth of the child. About puberty, however, it frequently seems to take a spurt, until, after some years, it presents the disgusting deformity shown.

Statistics point to there being a very definite hereditary element in the disease. There is no evidence that one sex transmits the disease more readily than the other. The question of sex has no bearing on the etiology. External factors such as alcoholism and syphilis play no causal part.

Clinical Signs and Symptoms.—The onset is insidious and the condition is often overlooked until it causes some mechanical inconvenience. In two of my cases, the first thing to draw attention to the condition was the discomfort and difficulty of putting on boots. Patients seldom complain of pain, usually seeking advice on account of the hideous deformity and the inconvenience resulting from the bulk of the tumour. If, as in my cases, the legs are affected, the patient complains of becoming very soon tired on walking. "It is like dragging a sack of flour when one walks." The sensibility of the skin is frequently blunted, but not as a rule lost. The skin is usually coarse and thickened, sometimes pigmented and with hairs growing from it: in other cases it is uneven and hard, like the surface of a "hob-nailed" cirrhotic liver. It does not pit upon pressure. Elephantiasis neuromatosa of the extremities is seen sometimes as a diffuse enlargement of the limb, as in the case of the youngest child; in other cases the limb is enormously enlarged and misshapen, with large pendulous masses with clefts and fissures. On the trunk, head, and neck it is met with as huge pedunculated masses which hang down, are flabby in consistence, and in which one can often feel convoluted nerve cords. This condition was well known to the older writers, and went by the name of "pachydermatocele." Such a mass is present on the mons veneris of one of my patients.

Associated with elephantiasis one frequently has other forms of neurofibromatosis in the same patient. The commonest of these is the plexiform neuroma. Other forms met with are the cutaneous neurofibromata (von Recklinghausen's disease), the multiple neurofibromata, pigmented and other moles.

Malignant Transformation.—Statistics lead us to the conclusion that sarcomatous transformation undoubtedly occurs. Cases have been reported where, as the result of trauma or operative interference, malignancy has supervened. In such cases the tumour rapidly increases in size and frequently becomes very painful.

Unlike the primary malignant neuroma, these secondary sarcomas seldom give rise to metastases in the internal organs. The onset of malignancy is accompanied by degeneration and destruction of the nerve fibres of the part involved.

Pathology.—Authorities agree that this condition results from a hyperplasia of the endoneurial connective tissue between the individual nerve fibres. On microscopical examination one sees a delicate network of connective-tissue fibrils, the processes of spindle-shaped cells which lie in the spaces between the original endoneurial fibres. In the meshes of the newly-formed network can be seen lymphocytes and rounded cells possessing a small nucleus and granular protoplasm. The spaces are filled with lymph and the tissue is well supplied with blood-vessels.

The perineurium appears sometimes to take part in the overgrowth.

The question as to the effect on the nerve fibres—whether they degenerate or not—is unsettled. Lahman, von Recklinghausen, and others, hold there is no change in the fibres apart from the mechanical displacement. Hürthle, Jordan, and others maintain that they have seen degeneration in the fibres. The pathology of elephantiasis neuromatosa is precisely the same as in other forms of neurofibromatosis, the special feature, however, being the spread of the fibromatosis from the endoneurium of the cutaneous nerves to the tissues surrounding them.

The fibrous nodules referred to in the adult patient and seen in Figs. 1 and 2 are the result of fibromatosis of the cutaneous filaments, similar in origin to the plexiform neurofibroma, and from which in all probability the more diffuse overgrowth has originated.

My patients refused to have any operation, consequently I have been unable to study the morbid anatomy and microscopical appearances in these cases. The following description, however, is extracted from Alexis Thomson's work on similar cases operated upon:—

"The skin and subcutaneous cellular tissue are enormously increased in thickness; the overgrown connective tissue presents a watery, glistening, greyish appearance, limited by the epidermis on the surface, and the fascia and the muscles beneath. In parts it is soft and gelatinous and exudes an abundant watery fluid, in other parts it is whiter, drier, and fibrous; it replaces the normal cutaneous and subcutaneous fat more or less completely. . . .

"Microscopically the following appearances may be observed.

The special seat of the connective-tissue overgrowth (as was also the case in the molluscum fibrosum) is the pars reticularis of the corium, throughout which it extends indefinitely in all directions, displacing and replacing the normal fat, encroaching on the pars papillaris, flattening out the papillæ and causing a partial disappearance of the regular and normal arrangements of the papillæ; on the deeper aspect of the corium the overgrowth extends into the subjacent cellular tissue. The sweat glands, although not appreciably altered in structure, may be displaced; when this takes place in a downward direction, the coils of the gland may be in immediate relation to the subcutaneous tissue, while their ducts are uncoiled and are correspondingly lengthened. The hair follicles and sebaceous glands remain unchanged. The deeper layers of the epidermis frequently show an excess of the normal pigmentation. The Pacinian corpuscles may be greatly enlarged."

References.—Thomson, *Neuroma and Neurofibromatosis*, Edin., 1900. Jordan, "Elephantiasis Congenita," *Ziegler's Beiträge*, vol. viii. 1890. Annandale, "Elephantiasis," *Edinburgh Hospital Reports*, vol. iii., Edin., 1895. Valentine Mott, "Pachydermatocele," *Med. Chir. Trans.*, vol. xxix., Lond., 1854.

CLINICAL TEACHING.

III.—OPHTHALMOLOGY.

[*Contributed.*]

In dealing with the question of the teaching of ophthalmology in a large medical school, it is first of all necessary to bear in mind that more than one type of teaching and of teaching equipment must be provided.

We have to teach (*a*) the medical student: (*b*) the medical practitioner (post-graduate teaching); and (*c*) the future specialist.

A. *The Medical Student.*—It may be laid down as an axiom that it is impossible to attempt to introduce anything like a complete course of study on the subject of diseases of the eye into the already overloaded curriculum of the medical student. It must also be admitted that the study of eye diseases is, in certain ways, much more difficult than that of most subjects which are brought under the student's notice. The teacher must therefore be content to confine his teaching for the most part to the commoner and more important forms of eye diseases, such indeed as are likely to come under the notice of the practitioner.

In Edinburgh the medical student attends on the average about twenty-eight lectures on diseases of the eye (clinical and systematic combined), and very probably he will supplement this prescribed number by attending six or eight senior cliniques in his final year. In addition, he attends six or seven meetings for tutorial instruction in the methods of examining the eye, and especially in the technique of ophthalmoscopy.

Though the time at his disposal is rather limited, the student has sufficient opportunity to make himself fairly familiar with the diagnosis and treatment of the more common eye diseases.

The fitting of spectacles is, however, a subject about which he must of necessity learn very little, although the general indications for the use of glasses and the simple optical principles underlying the correction of refractive errors are fully explained to him.

In a large eye clinic, with plenty of illustrative cases at his disposal, the teacher should have little difficulty in presenting his subject in an interesting and instructive manner. No great elaboration of equipment is required. The instruction should, if possible, be given in a theatre constructed for the purposes of teaching and so arranged as to afford the student the best possible opportunity of seeing the cases, and the teacher facilities for the display of diagrams, lantern-slides, microscopic specimens, etc. The ordinary out-patient room of the department does not meet these conditions, and while teaching is being conducted in it, the routine work of the staff is seriously hampered by the presence of the students. The want of a suitable lecture theatre in the ophthalmic department of the Royal Infirmary is a serious handicap to the lecturers.

Apart from its technical aspect, the study of diseases of the eye has a special educational value to the student, as it affords him unique opportunities of acquiring the habit of making accurate observations and of learning to make a definite diagnosis from the facts observed. For the same reasons the practice of the technique of ophthalmoscopy is of great educational value. In demonstrating eye cases to the student, the method of question and answer between teacher and pupil may be used with great advantage.

While dealing with the teaching of students, it may not be out of place to refer to a serious anomaly which at present exists with regard to the examination in ophthalmology at the final professional examination. Under the existing arrangements the examination on eye cases—admittedly a somewhat perfunctory one—is conducted, not by one of the ophthalmic surgeons, but

by an examiner in clinical surgery. The patients are sent from the eye department to the surgical wards, which greatly restricts the range of subjects on which the students may be tested, as many cases eminently suitable for examination purposes cannot with safety be sent from one department to another. If the examination is to be a serious test of the candidate's qualification to deal with eye cases in practice, it should be conducted in the eye department and by one of the ophthalmic surgeons.

B. *Post-graduate Teaching.*—A certain number of medical practitioners find themselves working under conditions where it is important that they should be masters of more than the average knowledge of diseases of the eye possessed by the general run of practitioners. To obtain this it is necessary that they should take part in the practice of a well-equipped and well-conducted eye clinic for not less than three and, preferably, six months. To spend their time as mere onlookers is a great mistake, as a practical knowledge of the subject is only to be gained by actual participation in the routine work of the department. It is, of course, chiefly in the out-patient department that such experience is to be gained, though regular attendance at operations may be of great value to men who, during their future career, will have to undertake the operative treatment of eye cases—*e.g.*, medical missionaries and officers of the public services. Courses of instruction given to practitioners are of little value unless supplemented by several months of earnest work in the clinic. The work, of course, must be done under the supervision of the senior members of the hospital staff. The graduate or practitioner should try to make his diagnosis for himself, and then have it confirmed, or have his mistakes and failures as they occur pointed out by his teachers. In this way he will most rapidly learn the points to be noted and the numerous pitfalls to be avoided.

In the Edinburgh clinic as at present arranged, sufficient provision is not made for graduates participating in the work of the department, the dark-room and sight-testing accommodation being inadequate for this purpose. The necessity for further accommodation for post-graduate students lies in the fact that the attempt to conduct teaching coincidently with the routine work of the department prevents the examination and treatment of the patients being carried on expeditiously. If an extra room were provided for the examination of patients by the graduates attached to the department, the teaching would be more efficient, while the treatment of the patients would in no way be interfered with.

C. *The training of the future specialist* is as great a difficulty in Edinburgh as it is in the vast majority of other medical schools in Great Britain. The out-patient departments are often crowded to overflowing. There are no paid assistants, and much of the time of the staff is taken up with a class of work which might be described as merely routine. There is not sufficient time for the complete examination of the more difficult and important cases, and much material of high educative value is allowed to pass through the clinic almost without comment. The junior specialist up to a certain point has splendid opportunities of learning from a practical point of view the routine work of an ophthalmic surgeon. He has often little time or energy left to devote to the more scientific side of his profession. It is a fact beyond question that ophthalmic surgeons in Great Britain, with very few exceptions, have had an inadequate training in the science of ophthalmology, however skilful they may be in the practice of its art. It is no doubt this feeling of dissatisfaction among junior oculists that has given rise to the suggestion that some, at least, of the large medical schools should provide a definite course of study for intending oculists and grant special degrees in ophthalmology to medical graduates. This has already been done, with some success, at Oxford, and, we believe, at Liverpool.

An ophthalmic department in a large medical school like Edinburgh should be thoroughly equipped for the training of the specialist in the more advanced and scientific branches of ophthalmology. While this involves a considerable expenditure on scientific apparatus, it makes for efficiency in the department. The patients derive direct benefit from the more accurate methods of diagnosis available, and the resulting improvements in treatment, and the hospital will in course of time be served by a more proficient and highly educated staff. Money expended in providing the necessary apparatus for scientific observation in the Infirmary would be well spent.

As regards practical instruction in physiological optics, there should be little difficulty in arranging that this be given in the physical laboratory of the University; and the heads of the pathological department would no doubt supervise the work of anyone studying the pathology or bacteriology of the eye. Special laboratories in connection with the eye department, such as are seen in continental clinics, appear unnecessary in Edinburgh, where adequate laboratory accommodation for experimental work

Photo. by Marshall Wane.

is freely provided in the pathological department and in other laboratories.

At present, by the rules of the Infirmary, a graduate is debarred from holding the post of clinical assistant in the Eye Department for more than one year. This arrangement might well be revised to the mutual advantage of the patients and the aspiring specialist. It is a great gain to the department when a competent man can be induced to continue to work there after his services have become of real value. One clinical assistant, at least, should be paid a small salary.

OBITUARY.

THE LATE SIR JOHN BATTY TUKE.

By the death of Sir John Batty Tuke, which occurred at Balgreen, Midlothian, on the 13th October, the profession of medicine has lost a distinguished alienist, the College of Physicians of Edinburgh a pillar of strength, and his many admirers mourn the loss of a singularly fascinating and attractive personality.

For some years it has been apparent to his friends that his strength was failing, and it was with sorrow that they witnessed his step becoming feebler, his eye losing its lustre, and his powers gradually waning. The machinery was worn out with length of years and active work, and after a short illness he peacefully passed "to where beyond these voices there is rest."

Born at Staines, near London, in 1835, his childhood's days were spent under the shadow of the beautiful old minster of Beverley, in the East Riding of Yorkshire, in which quiet little country town his ancestors had lived for several generations, his grandfather having filled the office of mayor on three successive occasions.

He claimed kinship with the old Quaker family of Tuke, who founded the famous retreat at York, the first institution in which the humane treatment of the insane, now happily universally adopted, was put in force.

In 1842 Tuke found himself in Edinburgh, under the care of his uncle, Dr. Smith; and from the house No. 20 Charlotte Square, where seventy-one years later he still had his consulting-rooms, he attended first the Circus Place School and afterwards the Academy, where so many of Edinburgh's illustrious sons have been educated.

Both in the classrooms and in the playing-fields of the Academy he made many friends, and all through his life he continued to take a warm interest in his old school, and with his schoolmates, the Lord Justice-Clerk and the late Sheriff Beatson-Bell, he retained his seat on the Board of Directors to the end.

Proceeding to the University of Edinburgh in the palmy days when Goodsir, Syme, Christison, and Simpson were numbered amongst the professoriate, he received his medical education from those world-famous teachers, and he attributed much of his success in later life to the influence of the training he received at the hands of those brilliant instructors. Graduating in 1856, and marrying, when barely twenty-one years old, Miss Magee, a daughter of the Rector of Drogheda, and sister of a future Archbishop of York, he was confronted with the necessity of earning a livelihood, and determined to push his fortunes in the Antipodes. Sailing in a troopship for New Zealand, he arrived there towards the commencement of the Maori War, and was appointed senior medical officer in charge of the colonial troops, with whom he served all through the campaign, encountering many thrilling adventures and stirring experiences, which he loved to recall in later life. At the close of the campaign the call of the gray old capital of Scotland sounded so strongly in his ears that he was unable to resist its promptings, and returning to Edinburgh, he determined to follow in the footsteps of his kinsmen, and to devote his attention henceforward to mental diseases.

For two years he served as assistant in the Royal Edinburgh Asylum under Dr. Skae, at the expiry of which period he was appointed medical superintendent of the Fife and Kinross Asylum.

Full of energy and enthusiasm, he entered on his duties with a determination to unravel some of the intricacies which lie hidden behind the mysteries of mental disease. He was one of the first to employ the modern and more humane methods of treating the insane by abolishing physical restraint, locked doors, and padded rooms, and to rely on the efficacy of a well-trained nursing staff. He was a pioneer in the study of the morbid anatomy of the brain and spinal cord, and lost no opportunity of conducting post-mortem examinations and of making carefully-prepared microscopic sections, believing that by these means he might find the clue to the hidden secrets of the causes of insanity. Associated with him in this work he had several enthusiastic co-workers, notable amongst whom was the late Professor Rutherford, who was his frequent guest at the asylum. It was here that Tuke laid the foundation of the distinguished place he ultimately attained as an alienist physician, and drew attention, by his published papers, to his name as an original thinker.

In 1873 he relinquished his appointment, and, returning to Edinburgh, he became associated with Drs. Smith and Lowe in the management of Saughtonhall Asylum, one of the great private institutions for the care and treatment of the insane in Scotland.

For many years afterwards the institution was under his sole charge, and by his scientific and progressive methods of treatment he won the entire confidence of the profession and of the public. A few years ago

the Corporation of Edinburgh acquired the estate of Saughtonhall as a public park, and the asylum was removed to Mavisbank, where it is now under the management of his son, Dr. Batty Tuke.

In the College of Physicians of Edinburgh he was deeply interested, and everything connected with its reputation, its progress and development, was very near to his heart. No one was better versed in its history or more loyal to its interests, and the College owes a deep debt of gratitude to his wise counsel on many difficult questions and his continuous watchfulness on its behalf. For many years he served on its Council, and became President in 1898. The College showed its appreciation of his great services by paying him the unusual compliment of asking him to continue in office for a third year.

It was while president of the College that the well-deserved honour of knighthood was conferred upon him, which gave the greatest pleasure and satisfaction to the Fellows.

To him belongs the credit of initiating and organising the laboratory of the College of Physicians of Edinburgh, and the name of Sir John Batty Tuke will for all time be honourably associated with the inauguration of this scheme.

During his long and active life many honours were showered upon him. For a number of years he was the representative of the College of Physicians upon the General Medical Council, and as chairman of the Education Committee he interested himself chiefly in the preliminary medical examinations, besides rendering many other valuable services. He was the recipient of the degree of LL.D. from his Alma Mater and the D.Sc., *honoris causa*, from Trinity College in the University of Dublin. He held the office of President of the Neurological Society of the United Kingdom and of the Medico-Chirurgical Society of Edinburgh. He represented his college on the board of the Royal Infirmary for a period of ten years. He was elected a Fellow of the Royal Society of Edinburgh, and in 1874 he delivered the Morison Lecture, his subject being "The Insanity of Over-exertion of the Brain," in which he shed fresh light on this interesting condition. In 1900 he was selected by the University Unionist Association as a candidate to represent the University in the Unionist interest, in succession to Sir William Priestley. On this occasion he was unanimously elected, but in 1906 he was opposed by Mr. St. Loe Strachey, whom he defeated by the large majority of 2583 in a poll of 7203.

Though he seldom raised his voice on the floor of the House, he did much quiet useful work on committees, interesting himself in all matters pertaining to education. In the smoking-room and on the terrace he was very popular, and made many friends by the geniality of his disposition.

Such is a brief and very inadequate account of Tuke's busy and active professional life, which won for him the respect and esteem of

his brethren. It is impossible, within the compass of a short tribute, to do justice to Sir John's many and varied personal characteristics, he was so versatile, he touched life at so many corners, and his interests were so widespread. He possessed a peculiarly subtle magnetism and charm of manner, which won him the friendship of men of the most diverse tastes and character. Amongst those who retained his lifelong friendship, all of whom passed before him to the silent land, were Professor Robertson Smith, Gibson the advocate, Hutchison the sculptor, Mr Irvine Smith, and Drs. Duncan and Underhill.

He was particularly happy in his relationships with younger men, in whose society he seemed to take special pleasure. Perhaps it was this association that kept his mind so alert and receptive of new ideas. Many of these friends, who have since risen to positions of distinction in their professions, have reason to remember with gratitude his encouragement and help in their early struggles with fortune.

A little coterie who for many years assembled every spring as his guests at his bungalow at Gullane saw Tuke at his best. Here he was the genial kindly host, dispensing a simple but generous hospitality, making everyone feel thoroughly at home, and drawing out whatever was best and most interesting in each of his guests.

Tuke was the life of the party, the happiest of the crowd, stalking round the links, a cheroot constantly between his lips, and closely followed by "Dandie," the faithful friend of many years. He took the keenest interest in everything, in the result of the various matches, in the game of "penny poker" in which he always joined, and in the discussions on every imaginable topic which took place round the roaring fire after dinner. The memory of these delightful holidays will linger lovingly in the hearts of everyone who was privileged to participate in them.

He was endowed with an intensely artistic temperament, and loved to surround himself with objects of beauty and vertu, many of them collected by himself during his wanderings in foreign lands. He dabbled in a dilettante fashion in literature, in music, in poetry, and painting, and numbered many artists amongst his acquaintances. He was deeply attached to George Paul Chalmers, one of the most renowned Scottish academicians of the last generation, the tragic circumstances of whose too early death cast, for a long period, a shadow over Tuke's life. Chalmers painted a charming picture of him as a young man, and an excellent replica of this picture now adorns the College walls.

He was a widely travelled man, and knew the continent of Europe well, and was a delightful companion on those pilgrimages, knowing the resources of every town as regards its famous pictures and statuary, its mediæval buildings, and, last but not least, the caravansary where the most récherché dinner could be obtained.

He was a lover of outdoor life, and interested in sport in all its

forms. In his younger days he shot, golfed, and curled, but latterly he confined his attention to the gentle art. A keen fisherman, he often spent the autumn holidays trout and salmon fishing in Ireland or in the sweet little cottage which for a number of years he rented on the banks of the river Aros in Mull, where a rod and a bed were always at the disposal of a congenial spirit. A member of the Medico-Chirurgical and the famous Æsculapean Clubs, he was a familiar and welcome figure at medical dinners in Edinburgh, as he had the faculty of diverting the conversation into interesting channels, and of entertaining his companions from a stock of anecdotes culled from a wide experience of men and incidents.

Tuke did not wear his heart on his sleeve, and had his feelings well under control, but he occasionally gave a glimpse to those who knew him intimately of the real tenderness of his nature, and his friends in trouble realised how genuine was his sympathy.

By the passing of a man of such useful activities and personal charm a blank has been caused in medical circles, especially in those of the city of his adoption, where his picturesque figure will long be missed in the streets and in the College of Physicians, which he served so faithfully and so well. G. H. M. D.

The death of a friend always calls up a crop of vivid recollections of old associations, and to some of us who have been away from Edinburgh and who have seen little of Sir John Tuke in these past years this is especially the case. We have this advantage over those who have been more closely associated with him to the end, as his health and vigour failed, that we remember him in his prime, as the warm friend, the genial host, and the eager and sympathetic supporter of all that goes to the advancement of the science of medicine.

It was in connection with the foundation of the Edinburgh Pathological Club in 1886 that I first came to know Tuke. Among some of the younger men the idea had gradually taken form of founding a club in which problems of medical science might be discussed freely and informally, where those who had been engaged in scientific investigations might have their results criticised by friends before they were presented to the public. In his characteristic way, Tuke invited us all—a large party—to dinner at Balgreen, and round his table the club was definitely launched on its long and prosperous voyage, during which it has well fulfilled the purpose for which it was started. There can be no doubt that Tuke's love of open and honest discussion, his love of a good fight between worthy and friendly antagonists, did much to imbue the club with that spirit of camaraderie among workers in the school which has all along been one of its chief characteristics. No one enjoyed such discussions more than Tuke, and the idea that

they should fail to make for better friendship never entered his head. And he was right. Many a friendship has been cemented over the endless pipes that were smoked in the small hours at the Pathological Club.

But Tuke's greatest work was the foundation of the Research Laboratory of the Royal College of Physicians. Again the idea was not entirely his. Many of the younger men in the eighties were dissatisfied with the facilities for scientific work offered by the University of Edinburgh. They felt that a corporation like the Royal College of Physicians should do something more for medical science than merely to support a medical library, and they evolved a plan of establishing a laboratory which should be open, free of all expense, to those who had shown themselves able to carry on research. But when it came to bringing such a scheme before the College, when it came to fighting the strenuous opposition of the older Fellows, it was upon Tuke that the brunt of the contest fell, and it was the indomitable spirit of the "Yorkshire tyke," as he used to call himself, which kept the band together, and which led it, after several defeats, to final victory in 1888, when the laboratory was founded and Tuke was made Curator. It was a child of which he was proud, as well he might be, for under his fostering care and with Woodhead as Superintendent it at once justified its existence, and soon became the centre of medical scientific work in the Edinburgh School. The laboratory was started in a modest way. An old house in Lauriston Lane, close to the Infirmary, was rented and fitted up for the prosecution of work on histological, chemical, and experimental lines. In the equipment of the laboratory the late Dr. Milne Murray played a prominent part As the work grew and prospered the need for new premises was soon felt, and the necessity of acquiring them was hastened by a fire which destroyed the upper flat. Tuke threw himself vigorously into the hunt for a suitable building, and in 1895 the College purchased the property at 2 Forrest Road, in which the laboratory now is.

At this time I was Superintendent of the laboratory; and only one who has held that post can know the time, thought, and energy which Tuke gave to it, or can appreciate the loyal support which he was always ready to give. His policy was to give the Superintendent a free hand, but he was always there with counsel, advice, and encouragement. My years of work with him were among the happiest of my life—happy not only in work but also in play, for Tuke was not only an ideal chief but also the best of good companions. And nowhere did he shine more than in Gullane House, where he gathered around him each spring a band of younger men, generally workers in the laboratory, and all golfers—more or less—whom he looked upon and treated as "his boys." But the youngest in spirit was Tuke himself, and even when the arch enemy gout was upon him he would treat it as he used to tell us the Irish colonel treated the complaint—"with

silent contempt"—and continued the life and soul of the party. As the small hours drew out, the idea of going to bed never seemed to enter his mind.

But perhaps fully to appreciate Tuke, fully to assess the genial kindliness of his nature, fully to recognise his wide culture and his love of all that is good and beautiful in art and nature, one had to campaign with him alone. Then, whether poring over the engravings of Schongauer and Dürer in Nuremberg, or fishing some Highland loch, or shooting on Aros Moor, or still more over the evening pipe, one felt that in Tuke one had an ideal companion.

His was not an easy life, but he faced it bravely, and never spoke of his own troubles. Only when completely mastered by gout did he acknowledge its existence; and there can be no doubt that his determination not to be ill, to carry on as long as he was able to move, and to ignore all precautions, helped to shorten his active life.

D. N. P.

RECENT ADVANCES IN MEDICAL SCIENCE.

MEDICINE.

UNDER THE CHARGE OF

W. T. RITCHIE, M.D.; EDWIN MATTHEW, M.D.; AND JOHN D. COMRIE, M.D.

Determination of the Shape of the Stomach.

Roentgenoscopic examinations *versus* clinical methods in the diagnosis of gastric disease forms the subject of a paper by Dunham, in which he gives the results of his comparison of the two types of examination in 94 cases (*Med. Rec.*, 14th June 1913). He considers that the X-ray examination must not be regarded as more of an exact mathematical method than percussion, though it gives to the clinician very valuable help in diagnosis. Bismuth carbonate, he concludes, is the most satisfactory contrast substance as yet introduced, because it does not increase the peristaltic action of the stomach as do barium preparations. He holds for this reason that the time of emptying of the Roentgen meal is of no value to determine early stages of pyloric stenosis, for which the only test remains still the washing out of the stomach at varying times after a test meal. Radioscopy gives valuable information, on the other hand, in cases of hour glass contraction of the stomach, and in the differential diagnosis of motor insufficiency caused by atony and that due to advanced stenosis at the pylorus. In pyloric cancer there is a permanent irregular line close to the pylorus seen by radioscopy, and this is of great help in diagnosing this condition.

Physiognomy in Diagnosis.

The diagnostic study of the face is an old subject taken up anew by Knox from the experience of his examination of 50,000 immigrants at Ellis Island every year (*New York Med. Journ.*, 14th June 1913). He considers that there are some hundred and fifty-four distinct, not uncommon, disease entities that present more or less prominent facial symptoms. He believes that about ten years of residence in the United States serves to blot out the peculiarity of expression which gives a racial stamp to the features, and to reduce all white men to a general American type, though, of course, the anthropometric race average as regards actual measurements remains decidedly characteristic. Apart from the ordinary physical signs, such as pallor, redness, cyanosis, jaundice, the condition of the pupils, ptosis, etc., the following are some of the special features the author has noted :—Flushing of one cheek and malar flush on both sides are very common accompaniments of pneumonia and phthisis respectively. The well-known pallid puffy facies of nephritis is often accompanied by a permanent distension of the ear lobule, which may be a help in diagnosis of the chronic form of Bright's disease after an acute attack has passed away. Hernia abdominalis is frequently associated with a distinctive facial condition of masseteric wrinkling. This is often seen in presenile men along with wrinkling of the eyes and forehead, but when the upper parts of the face are smooth the masseteric ridges are said to be a certain sign of weak abdominal walls or potential hernia. The sterility which is often a feature found in degenerate stocks that present family, "peculiar," or mentally defective characteristics has a distinctive facies ; this consists of an exaggeration of Fröhlich's syndrome, due to hypopituitarism, together with the presence of what the writer calls the "labial circle" or "oval." The latter is formed by pronounced naso-labial folds in its upper part, and below by depressions in the skin continuing these folds down to the mental eminence. Hookworm disease causes a tallow colour of the skin, with a fishy, cadaveric stare and a dull chalky whiteness of the sclera. Congenital heart disease has for one of its most pronounced evidences what the writer calls the "waxy lip." This consists of a smooth, full, everted condition of the lip, whose colour is not cyanotic but of a bright crimson hue, reminding one of the exaggerated colour of a wax model. It is interesting to note that the writer condemns most of the usually accepted stigmata of degeneration as quite unreliable in the recognition of feeble-mindedness and moral obliquity, and he also finds that the criminal as a "type" does not exist.

Optic Atrophy from Methyl Alcohol.

Wood alcohol blindness, which has occurred in persons either drinking or applying externally spirits containing methyl alcohol, is

the subject of a paper by Woods (*Journ. Amer. Med. Assoc.*, 7th June 1913). He finds that wood alcohol, which is only about one-fifth the price of grain alcohol, and therefore liable to be used in place of the latter, is a dangerous poison in any of its forms, menacing both life and sight. It appears to be largely used, not only in the manufacture of cheap whisky in America, but as a solvent for many essences and flavouring fluids, as well as in the manufacture of liniments and perfumes. The symptoms of its use, which may follow either external or internal application, are gastro-intestinal disturbances more or less severe, accompanied by abdominal pain, general weakness, nausea, vomiting, vertigo, headache, dilated pupils, and blindness. If recovery does not take place there is further depression of the heart's action, delirium, unconsciousness, coma, and death. Inhalation of the fumes may also be followed by serious symptoms. The nature of the blindness is the appearance of a limitation in the visual fields with a central scotoma, and on ophthalmoscopic examination atrophy of the optic nerve. The vision comes and goes for a time, but ultimately settles down to the persistence of the greatest defect noticed during the progress of the malady. In one case recorded by the writer total blindness followed the use for about a month of wood spirit as a liniment for a painful condition of the lower limbs.

Human Blood in Treatment of Anæmia.

The treatment of severe cases of anæmia by intravenous injections of human blood in small quantities is dealt with by Weber (*Munch. med. Woch.*, 17th June 1913). His method is to take from the vein of a young healthy person 20-30 c.c. of blood, let it flow into a glass flask, beat it for 5 minutes with a glass rod for complete defibrination, filter through muslin, and place for 24 hours in the refrigerator. Next day the blood is warmed to body temperature, the corpuscles shaken up, and 5 c.c. injected by means of an ordinary syringe into a vein of the arm. This is repeated every 8 or 10 days. No bad result has followed any of these injections beyond an occasional slight rise of temperature. The writer considers that this method is followed by quite as good results as the administration of arsenic, although, after great improvement, both in symptoms and in the condition of the blood, cases of pernicious anæmia relapse in much the same way as they do when treated by other means.

Cancer of Lung.

Several cases of primary cancer of the lung are recorded by Wiczkowski (*Wien. klin. Woch.*, 1913, No. 26). He finds from an examination of the records of some of the large German hospitals that these tumours, like cancer in general, are apparently increasing in frequency. He himself, out of ten cases that came to post-mortem

examination, was able to diagnose nine correctly during life. The physical signs upon which he lays especial stress for the diagnosis are marked indrawing of the subclavicular region, a board-like dulness on percussion, loss of the breath sounds and often faintly-heard bronchial breathing, grey and often blood-tinged sputum with negative examination for tubercle bacilli, small hardly visible glands in the neighbourhood of the tumour at places where normally they are not looked for nor found, sometimes a perpetual cough (laryngeal), the temperature in uncomplicated cases usually normal, the characteristic condition of the pleural effusion. Further, the clinical diagnosis is generally supported by X-ray examination. The commonest form of tumour, according to this writer, is the cylindrical-celled carcinoma arising from the epithelium of the lymph-glands and leading to blockage of the bronchi. The second form infiltrates the lung in large greyish-yellow soft masses, the so-called phthisis carcinomatosa, while the third and least common is the endothelioma of the pleura.

Rat-bite Disease.

A case of peculiar rat-bite disease is recorded by Hewlett and Rodman (*Practitioner*, July 1913). This consists of a fever following on the bite of a rat. After an incubation period of 5 weeks to 2 months there is a sudden invasion, with rise of temperature to 103° or 105°, rigor, headache, and it may be lymphangitis and swelling of the lymph glands in the neighbourhood of the bite. After about 2 or 3 days the temperature reverts to normal, and when a week has passed another febrile attack supervenes. A succession of such febrile attacks may supervene for a long period, and death results in about 10 per cent. of cases. Ogata in Japan believes that he has detected a protozoan parasite in the blood of cases occurring in that country.

Experimental Digestive Leucocytosis.

The leucocyte reaction of the organism to various artificial forms of feeding has been experimentally studied by Richet in the dog (*Presse Méd.*, 2nd July 1913). It is commonly stated that during digestion the number of white cells in the circulating blood increases a little, but Richet finds that this holds good only for protein food. Further, in the dog while raw meat produces a great leucocytosis, roasted meat causes none at all. The average leucocyte count for the dog he found to be 10,000 per c.mm. After a meal of raw meat (50 grm. per kilo of body weight) the average count was 16,800, while after a similar amount of roasted meat it was but 9500. Meat juice caused a leucocytosis of 17,300, and raw white of egg in meals of 10 to 20 grm. per kilo of body weight was followed by a leucocyte count of 15,100. These figures were the result of about 60 experiments. He experimented also on the amount of leucocytosis following peritoneal injec-

tions of normal saline solution, and found that whether small or large quantities of fluid were given a leucocytosis amounting to 14,300 was produced. A still greater amount, 22,100, was caused by a weak solution of peptone injected into the peritoneal cavity. The strongest reactions of all were produced when toxines were injected intravenously. The chief substance used was crepitine, a vegetable toxin derived from *Hura crepitans*, and the injection of this substance in doses short of the lethal quantity produced a leucocytosis lasting in some cases up to 43 days, and reaching the amount of 26,400, 29,000, and even 29,400. It was noted, however, that a degree of immunity was soon obtained, and that second and subsequent injections of crepitine were followed by a much milder leucocytosis.

Secretin as a Gastro-Intestinal Stimulant.

The use of secretin in gastro-intestinal disorders is discussed and advocated by Harrower (*New York Med. Journ.*, 16th August 1913) He gives an outline of the history of our knowledge regarding this product of the alimentary mucosa, and a description of its method of preparation. It is specially for intractable cases of dyspepsia and constipation that he recommends its use. While in experimental administration it has usually been given intravenously, the writer recommends that it may well be taken by the mouth, and that its use as a specific stimulant of the digestive juices is often surprisingly successful. It is, of course, not a digestive like pepsin or pancreatin, but is comparable in action to stimulants like ginger, strychnine, etc., and, as the writer holds, is superior to any of those ordinarily used.

New Type of Sphygmomanometer.

A new type of sphygmomanometer is recommended by Dearborn (*New York Med. Rec.*, 23rd August 1913). It consists of a binaural stethoscope with narrow end-piece, upon which stands a pillar containing a spiral spring which can be compressed by a handle sliding up and down the pillar. The observer listens by means of the stethoscope over the brachial artery, which he meantime compresses with the stethoscope. The cessation of all noise of pulsation indicates the point of systolic pressure. The diastolic pressure is taken at the time when the rythmic beat of the artery, pulsating as the pressure is relaxed, begins to be obscured by a rumbling murmur. The equivalent of these points in the compression of the spring is registered on scales indicating both millimetres of mercury and absolute grammes of weight.

J. D. C.

SURGERY.

UNDER THE CHARGE OF

J. W. STRUTHERS, F.R.C.S., AND D. P. D. WILKIE, F.R.C.S.

SURGERY OF THE SPINAL CORD.

Resection of Posterior Nerve Roots.

At the Third Clinical Congress of Surgeons of North America several important papers dealing with spinal surgery were contributed. That by Foerster (*Surg. Gyn. and Obstet.*, May 1913, p. 463), on the resection of posterior spinal nerve roots, was of particular interest as being the first comprehensive summary of the results following the operation now associated with his name.

There are three main indications for this operation, namely, for violent neuralgic pains, for gastric crises of tabes, and for spasticity and spastic paralysis due to a disease of the cortico-spinal path, especially of the pyramidal tract.

In 44 cases the operation was carried out for the relief of severe neuralgic pains which had withstood all medical treatment and which were due to a variety of causes, from plexus neuralgia to metastatic cancerous deposits in the vertebræ. The results in this group were on the whole not very satisfactory. There were 6 operative deaths, in 12 cases the operation was completely successful, in 23 cases the pain persisted, whilst in 3 the result was not known. The cause of failure in most cases was in Foerster's opinion due to an insufficient number of roots having been divided. It has been found, for example, that the division of four or five adjacent lumbar roots produces very little disturbance of sensation in the corresponding lower limb. Foerster now advises that, where the pains involve the arm, the 3rd to the 8th cervical and the 1st, 2nd, and 3rd dorsal roots be divided, and that when the lower limb is involved the 10th, 11th, and 12th dorsal, all the lumbar and all the sacral roots be divided.

For the relief of *gastric crises in tabes* the operation has been carried out in 64 cases, with 6 deaths. Immediate success was attained in 56 cases, whilst in 2 cases no benefit occurred. In 29 cases no relapse had occurred (in some of these cases, however, the period since operation was too short to permit of them being classified as cures), in 18 cases the crises had recurred, though less frequently and in much milder form than before operation, whilst in 9 cases recurrence had taken place within a few months, the crises differing little if at all from those before operation.

Foerster maintains that in this class of case also, failure has been due usually to an inadequate operation. In these cases at least the 6th to the 10th dorsal roots must be resected, and it is better to divide

7 roots. In a certain number of cases in which the crises are cured, intestinal pains occur sooner or later after operation. In some instances these pains are transient, in others, however, they are lasting. They are caused by an affection of the roots above and below those resected, and are probably due, in part at least, to irritation from effused blood in the arachnoid consequent to the operation.

Only severe cases of gastric crises should be subjected to operation, which, if undertaken at all, must be extensive.

For *spastic paralysis* the operation has been carried out in 159 cases, with 14 deaths. In the cases of congential spastic paralysis, 88 in number, the results have been on the whole satisfactory: indeed this would appear to be the most fruitful field for radicectomy. The operation was performed in 11 cases of disseminated sclerosis, with 4 deaths, considerable improvement in 4 cases, and no improvement in 3 cases in which the disease continued to advance.

In 23 cases of spastic paralysis of the arm the results were, with a few exceptions, unsatisfactory, as in most cases the spasticity was accompanied by a paralysis which the operation merely converted into the flaccid type.

In the 13 cases of *athetosis* subjected to this operation no improvement resulted, and in one or two instances the condition was aggravated by the surgical interference. From a careful review of the results following his operation for the relief of spastic paralysis Foerster draws the following practical conclusions:—

(1) Before undertaking the operation it must be ascertained that the disease is stationary or is progressing very slowly, thus the majority of cases of disseminated sclerosis must be excluded. (2) Syphilitic affections of the brain and cord should only be operated on after prolonged and energetic specific treatment, which should be resumed after the operation. (3) A certain number of pyramidal fibres must be intact, otherwise the operation merely converts a spastic into a flaccid paralysis. (4) As many roots as possible must be resected, *e.g.*, for the lower limb at least 5 roots must be excised, otherwise relapse is to be expected. In the case of the lower limb the root controlling the extensor reflex of the knee must be spared, as this reflex is necessary for walking or standing. This root is usually the 4th lumbar, but it may be the 3rd, a point which must be determined by electrical stimulation during the operation. (5) Careful and prolonged after-treatment, including regulated exercises, is essential to complete success.

Anastomosis of Ventral Spinal Roots.

Frazier (*Ibid.*, p. 555), in a general paper on spinal surgery, referred to a case, the first of the kind on record, in which he had successfully anastomosed anterior spinal roots for paralysis of the bladder following an injury of the cord. The bladder has two or three sources of nerve

supply, one of which is through the 3rd and 4th sacral segments and roots. On the cadaver it was found that the 12th dorsal or 1st lumbar roots, if divided at their points of exit from the spinal canal, could be brought into contact with the 3rd and 4th sacral roots in the cauda equina. Accordingly Frazier decided to attempt such an anastomosis in his patient. The laminæ of the 12th dorsal and 1st and 2nd lumbar vertebrae were removed, and the 1st lumbar root was divided at its point of exit from the cord. The 2nd sacral root was then identified by means of electrical stimulation, movements of the great toe following faradisation. The next two roots, *i.e.*, the 3rd and 4th, were then divided, and an end-to-end anastomosis effected with the finest Chinese silk, the divided nerves appearing to be in perfect contact and under no tension. Four months after operation the patient reported that he was able to retain urine for two and a half hours, and that there was some expulsive power in the bladder. Eight months after operation a further report stated that he could now dispense with the urinal which he had hitherto worn constantly, and that with the assistance of pressure over the suprapubic region partial evacuation of the bladder was possible.

Operative Treatment of Fractures of the Spine.

In regard to this subject Frazier (*Ibid.*, p. 552) laid great stress on the importance of Allen's discovery that the serious effects of contusion of the cord such as may attend fracture or fracture dislocation of the spine can be entirely relieved by a median incision in the cord at the site of injury. The object of the incision is to allow of the escape of the traumatic effusion, both blood and lymph, the presence of which may of itself result in destruction of the cord tissue. Frazier has carried out this operation with partial success in one case in which after a fracture in the mid-dorsal region the patient presented the signs of a complete transverse lesion of the cord.

Tumours of the Cord.

Hecht (*Ibid.*, p. 475), discussing this subject from the point of view of the physician, emphasised the importance of early surgical interference in all doubtful cases. Contrary to the views of many neurologists, he has been impressed by the difficulty in diagnosing tumour and by the number of atypical cases met with. Statistics compiled from various sources appear to show that one-half of all intra-spinal tumours are operable, and that good recoveries are made in more than 30 per cent. of cases operated on. The diagnosis from circumscribed serous meningitis may present difficulties, but as in this condition also surgical treatment is indicated, the differential diagnosis is not of great moment.

Frazier (*Ibid.*, p. 553) endorsed Hecht's views on the relatively favourable outlook in the surgical treatment of intra-spinal as compared with intra-cranial tumours. This is partly due to the greater accuracy in localising the growth which is possible in the case of the cord, and partly to the freer access which can be safely obtained in attempts at removal of growths. In regard to palliative operations he confirmed Elsberg's observation that in the case of intra-medullary tumours there is a tendency to spontaneous extrusion after incision of the overlying membranes. He had also been able in several cases of metastatic growth causing intense pain to give great relief by laminectomy and section of the affected posterior nerve roots. In performing the operation of laminectomy Frazier had found Meltzer's method of intra-tracheal insufflation anæsthesia to be a great help. The operation can usually be carried out in one stage, and shock can be lessened by the application of a 4 per cent. solution of stovaine to the surface of the cord, just above the seat of operation. The bleeding, which is usually from the cut surfaces of the laminæ and from the spinal plexus of veins, is readily controlled by introducing a small linear tampon behind each of the dural flaps.

Scoliosis.

For the successful treatment of lateral curvature of the spine Abbott (*Surg. Gyn. and Obstet.*, August 1913, p. 137) maintains that the same principle should be observed as in the treatment of other deformities, such as club-foot. Thus it has been shown that to cure a deformity it must be over-corrected and then held in this position until the muscles, bones, and ligaments have regained the normal. The deformity in scoliosis consists of flexion, lateral bending, and rotation of the spine, and, as the two latter changes always occur with the spine in the flexed position, they should therefore be corrected in this attitude. Abbott's treatment consists essentially in applying a plaster jacket to the trunk whilst it is in an attitude of flexion, and then gradually producing over-correction of the lateral deformity by the introduction of pads through suitably placed windows. For the application of the jacket the patient is placed in a hammock slung from an iron frame, at either side of which are four windlasses for the purpose of lateral traction. The patient's feet are elevated in order to flex the spine, and lateral traction by means of straps is then employed. The plaster case is now applied, and as soon as it is set a large window is cut over what was formerly the concave side of the chest, to allow of its expansion. Small windows are cut over the other (formerly convex) side, and through these apertures portions of thick felt are inserted, thus forcing the patient into a position of over-correction. Felt is again introduced through small anterior windows in the jacket in order to correct the rotation. Further pads of felt are introduced at intervals of a week,

until a marked degree of over-correction has been obtained. The time necessary for the patient to be held in this position varies with the severity of the deformity. In the milder cases a few weeks will suffice, whilst in old-standing cases the fixation treatment must extend over months, during which time the plaster may require to be applied on several occasions. After the plaster is removed the patient is given regular exercises, and is fitted with a light celluloid corset shaped to the over-corrected position attained by the previous treatment.

The results recorded by Abbott as shown by the numerous illustrations in his paper are very striking. He appears to have obtained not only improvement but complete cure in cases which usually would have been considered incurable.

Royal Whitman (*Ibid.*, p. 145) discusses the results obtained in cases of scoliosis treated by Abbott's method in the New York Hospital for Ruptured and Crippled. Whilst admitting that by this method severe cases of lateral curvature can be corrected as by no other form of treatment, he has failed to obtain the rapid and uniformly satisfactory results which Abbott himself has reported Frequently the patient complained of pain, loss of sleep, and of respiratory embarrassment. The stooping attitude and somewhat grotesque deformity which the treatment entails excludes the young patients from ordinary occupations and amusements. In many cases, particularly those with high dorsal curves and sharp backward angulation of the ribs, little improvement resulted. The principles underlying the method, however, are undoubtedly correct, namely that as lateral curvature is essentially a flexion deformity, rotation should be more easily reduced in flexion than in extension, and that the deformity should be corrected before functional activity is permitted.

Vulpius (*Deutsch. med. Woch.*, 1913, No. 15) has treated 25 cases of scoliosis by Abbott's method, and is convinced that the principle is sound, and when skilfully applied will yield wonderful results. Whilst his cases are too recent to allow of any conclusions as to the permanence of the cure, he has treated successfully by Abbott's method cases of lateral curvature which formerly he would have regarded as hopeless.

D. P. D. W.

DISEASES OF CHILDREN.

UNDER THE CHARGE OF

G. H. MELVILLE DUNLOP, M.D., AND A. DINGWALL FORDYCE, M.D.

Effects of Syphilis on the Nervous System in Childhood.

The following is a very brief summary of a series of papers on the above subject by Sydney Owen (*Clin. Journ.*, vol. xli., pp. 17, 42, 57, 75).

(1) Syphilis produces lesions of the nervous system in children with far greater frequency than is generally supposed. (2) While it is more usual to meet with lesions of the nervous system due to inherited syphilis, we must not lose sight of the fact that in a small percentage acquired syphilis is responsible. (3) It is important to remember that the nervous lesions in acquired syphilis may occur very soon after the primary infection. In inherited lues, while most of the nervous lesions first manifest themselves within the first few months or even years, they may occur at any age up to puberty, at which time the parasyphilitic diseases are usually met with for the first time. (4) If we admit that a Wassermann reaction of the blood, when positive (with certain well-defined exceptions), is conclusive evidence of syphilis past or present, then we have in this reaction a very valuable method of examination, because a positive Wassermann reaction of the blood may be the only positive evidence we have of syphilis. (5) A careful chemical and cytological examination of the cerebro-spinal fluid, especially with the application of a Wassermann reaction to this medium, is essential. It will, in a large percentage of cases, enable us to differentiate syphilis of the nervous system, which is amenable to treatment, from parasyphilis. Where syphilis produces a primary neuronic decay in the nerve structures, apart from any pronounced meningeal changes, we must not expect to find changes in the cerebro-spinal fluid that we usually associate with syphilis and parasyphilis of the nervous system. (6) Whilst the evidence is rather conflicting, it would appear that syphilis is responsible for a higher percentage of mental defect than is usually stated. (7) Whilst syphilis is responsible for a high percentage of cases of interstitial keratitis, it is the only cause of hyalitis in infants—a rare but well recognised type of amaurosis in infancy. (8) During the first few months of life syphilis is a not infrequent cause of meningitis and hydrocephalus. A lumbar puncture and a Wassermann reaction afford great assistance in the differential diagnosis. (9) The part which syphilis plays in the production of diplegia is uncertain. The writer thinks there is evidence to show that it is responsible in a few cases, especially those of the antenatal type. It is difficult to prove or disprove an accidental association. (10) Syphilitic epilepsy is infrequent. The writer is inclined to the view that, in infants especially, convulsions are more likely to occur in those who are the subject of inherited lues than in children who are otherwise healthy. In older children syphilis may be the sole cause of mental deficiency and fits of the idiopathic type. Fits of the Jacksonian type and the epileptiform seizures of general paresis are not included in the above statement. (11) Whilst myelitis is a common lesion in adults who are suffering from acquired syphilis, spinal lesions apart from tabes appear to be infrequent in the subjects of inherited lues. (12) The parasyphilitic affections of inherited lues closely resemble those

seen in the subjects of the acquired malady. (13) The morbid anatomy of inherited and acquired syphilis of the nervous system appear to be identical. (14) The prognosis in diseases of the nervous system due to syphilis is grave. Early diagnosis is essential to procure a good result from treatment. In the Wassermann reaction and a careful examination of the cerebro-spinal fluid we have the most efficient aids to an early diagnosis.

Diphtheritic Paralysis.

Rolleston gives his experience of the occurrence of paralysis in 2300 cases of diphtheria which he had treated (*Arch. Pediat.*, May 1913). He had exceptionally favourable opportunities of observing the onset of the paralysis, as none of the diphtheritic patients were discharged from hospital before the end of the sixth week, and it is quite unusual for paralysis to develop after that date. Of the 2300 cases, 477 (or 20 per cent.) showed some form of paralysis, 184 were severe, and 85 were fatal. In each series of 100 cases the percentage of paralysis was never less than 10 or more than 31. By a process of classification he was enabled to establish a close relationship between the acuteness of the initial attack and the subsequent paralysis. Of the 107 cases of the malignant form of the disease known as hæmorrhagic diphtheria, with the exception of those who died of toxæmia, all had paralysis of some kind. Paralysis was found to be much more frequent and severe in cases in which the nostrils were involved as well as the throat than in those in which the fauces alone were affected, Thus among the faucial and nasal cases paralysis occurred in 42 per cent., whereas in diphtheria confined to the fauces it was only in 14 per cent.

Not only is paralysis more common after severe than after mild diphtheria, but affections of the tendon-jerks and the presence of Babinski's sign are also much more common. The superficial reflexes are only lost in cases of generalised paralysis. In 31 cases a relapse occurred, separated from the initial attack by periods varying from three to fourteen weeks. None of these cases showed any paralysis after the relapse. This absence of paralysis is an evidence of the invariably mild character of the relapse, due in part to the immunity conferred by the primary attack. Paralysis is more frequent in children than in adults, the great majority occurring between two and six years. Only 10 cases of paralysis occurred after eighteen years of age, and of the 80 cases of cardiac paralysis the oldest patient was thirteen, and of the 16 cases of paralysis of the diaphragm the oldest patient was 8 years.

Early injection of antitoxin undoubtedly shortens the disease and tends to diminish the occurrence of complications. The only palsies occurring during the first fortnight of the disease are cardiac and palatal. Disturbance of the heart's action may occur at any period

of convalescence from diphtheria, but no case of cardiac paralysis proved fatal in which the symptoms had not developed before the end of the second week. These two forms of paralysis are invariably associated with malignant forms of diphtheria. Ocular paralysis never occurred before the end of the third week, and only exceptionally before the fourth week. Paralysis of accommodation was much more common than cases of strabismus. After the first fortnight no serious paralysis need be feared till the fifth week, when generalised paralysis, including paralysis of the pharynx and diaphragm, is liable to develop. Palsies of the facial muscles and vesical and rectal paralysis may also occur at this period. It is fortunate that the more serious forms of late paralysis, viz., paralysis of the pharynx and diaphragm, should not only be much less frequent but also of much shorter duration than the other varieties of paralysis. The average duration of complete paralysis of the pharynx, necessitating artificial feeding, was 11 days. Diaphragmatic paralysis is of even shorter duration, the average period being 7 days. In the 2300 cases there were 85 deaths caused by paralysis, and of these 80 were due to cardiac paralysis, and the remaining 5 to diaphragmatic paralysis. The prognosis depends on the age of the patient, the date of onset, and the situation of the paralysis—the older the patient the better the prognosis. No fatal case occurred above the age of thirteen, and no case of paralysis of the pharynx occurred over fourteen. Cardiac, pharyngeal, and diaphragmatic palsies are the only forms which need cause anxiety.

Closely allied with cardiac paralysis is a progressive enlargement of the liver, partly due to congestion and partly to fatty degeneration. Out of 111 cases showing signs of liver-enlargement 71 died, a mortality of 63 per cent., compared with a 6 per cent. mortality in cases exhibiting no such sign. A well-marked serum reaction occurring at the usual period after infection is a very favourable omen, it being exceptional for these cases to die from cardiac paralysis in whom an urticarial eruption has been well developed. The prognosis of pharyngeal palsy depends on the ability of the patient to support artificial feeding and the extent to which other muscles are involved. When once the power to swallow is regained the progress as a rule is remarkably rapid.

In addition to the early use of antitoxin, rest in a recumbent position for a period varying with the severity of the attack gives the best results. In mild cases the patient may be allowed to sit up in three weeks, but in severe cases he should be kept recumbent for six or seven weeks, and only allowed to sit up then if no paralysis has developed. In cardiac, diaphragmatic, and pharyngeal paralysis the prophylactic administration of adrenalin either hypodermically or by the mouth is of service by combating the suprarenal insufficiency which plays so large a part in cardiac paralysis.

Duodenal Ulcer in Infancy.

Duodenal ulcer has generally been supposed until recently to be very rare in infancy and childhood, but within the last few years an increasing number of reports of this condition in young children indicate that it is not at all uncommon, but that it has hitherto been overlooked. More light would be thrown on the subject if it were made a routine practice at all autopsies on children to examine the duodenum carefully and systematically, with a view to determine the presence of ulceration.

Schmidt (*Berlin. klin. Woch.*, March 1913) believes that the condition is more common during the first year of life than at any subsequent period. In 1109 autopsies of infants under one year, at the Pathological Institute at Breslau, there were twenty recorded cases of duodenal ulcer, representing 1·8 per cent. of the total, whereas in 2715 necropsies on persons over two years old in the same place duodenal ulcer occurred seventeen times, representing only 0·6 per cent. of the total.

The writer attributes the present ignorance of duodenal ulcer in infancy to the frequent absence of symptoms during life. In fourteen cases the presence of an ulcer was only twice recognised during life, so that our knowledge of the existence of this condition largely depends on post-mortem evidence.

That the condition may be spontaneously cured during infancy, as in later life, is shown by the occasional discovery of cicatrised scars in the duodenum. Most of the children in whom an ulcer was found at the autopsy had suffered from malnutrition or marasmus. Other conditions associated with the presence of an ulcer were parenchymatous nephritis, purulent inflammations, digestive disturbances, and pyloric stenosis. The author believes that the diseases mentioned, by lowering the vitality and resisting power of the intestinal mucosa, act as predisposing factors.

Holt in a recent paper gives his observations of four cases which he treated, and which were all examined post mortem. The ulcer was in the same situation in all, just below the pyloric ring on the posterior wall. They were all punched-out ulcers, with no sign of repair, and the base was necrotic. Entz of Buda-Pesth found 10 cases of duodenal ulcer in 364 autopsies in infants. In about a third of the reported cases multiple ulcers are present, usually two or three; in about a fifth of the cases perforation has taken place. The cause of the ulcers has generally been assumed to be a thrombosis, then a necrosis, and subsequently digestion of the intestine by the acid gastric juice. Duodenal ulcers have been associated with melæna during the first five days of life. In not a single one of the reported cases in infants has duodenal ulcer been associated with burns, though in 14 autopsies upon cases of burns in adults and older children 5 duodenal ulcers

were discovered. Diagnosis during life is extremely difficult, and is made in a very small percentage of cases. In many instances the only symptoms of peritonitis is acute collapse, followed in a few hours by death. The vomiting of blood, either clear or coffee ground, is seen in a small proportion of cases.

The sudden occurrence of an acute peritonitis should always lead one to think of duodenal ulcer. Spontaneous recovery occurs in a small number of cases, but it may be fairly assumed that in the great majority the condition is fatal. G. H. M. D.

LARYNGOLOGY, OTOLOGY, AND RHINOLOGY,

UNDER THE CHARGE OF

A. LOGAN TURNER, F.R.C.S., J. S. FRASER, F.R.C.S., AND W. G. PORTER, F.R.C.S.

Endoscopy of Larynx, Trachea, Bronchi, and Œsophagus.

Chevalier Jackson (*Report, International Medical Congress*, 1913) addressed inquiries to 380 laryngologists in America. Of these only 79 had attempted bronchoscopic or œsophagoscopic foreign body work, and only 35 cared to do it.

As regards mortality, in 171 cases of foreign body in trachea and bronchi bronchoscoped during the last two years by various operators, there were 9 deaths (5·3 per cent.). Of the foreign bodies 156 were removed. The author's own statistics, which are not included above, are as follows:—In the last 182 consecutive cases of bronchoscopy for foreign body there were 3 deaths (1·7 per cent.) from all causes within one month. The foreign body was removed in 177 cases. Results in œsophagoscopy:—Of 193 cases of œsophagoscopy for foreign body by various operators, the foreign body was removed in 155; of the 38 not removed, 26 went down. There were 12 deaths (7·8 per cent.). In 7 of the deaths the œsophagoscopy was done by operators whose total number of cases was less than 3.

In the large cliniques the mortality was 3 per cent. Of 206 cases of the author's the foreign body was removed in 198, and escaped downwards in 8. There were 4 deaths, 3 in patients admitted with severe lacerations from previous attempts at œsophagoscopy.

Radiography.—Excellent progress has been made in the radiographic localisation of foreign bodies, especially now that practically instantaneous radiographs can be taken. The improvement in lateral radiography of the thorax has been of great aid in the localisation of foreign bodies in conjunction with the calliper guide suggested by Dr. Boyce and developed by the author. This will bring the point of the bronchoscope in close relation with the foreign body. This method is used only in the case of small foreign bodies which have fallen into

a very small bronchus, far down or far out, near the periphery of the lungs. Another aid in this class of difficult case has been used by the author. A positive transparent film of the tracheo-bronchial tree is laid over the negative of the patient showing the foreign body, when the foreign body will show through the transparent tracheo-bronchial tree of the overlying positive film. There are 12 sizes of film positives, from which one to correspond to the size of the patient's negative is selected.

Instruments.—In the statistics which the author gathered there was practically no difference as regards mortality or percentage of successful removals of foreign bodies between the different kinds of instruments used, and, as he very rightly observes, far more depended on the individual skill of the operator. Doubtless the best instrument for each operator is the one with which he has practised most.

Preparation of the Patient.—The author insists that the preparation of the patient should be the same as for any operative procedure—a cathartic, and rest in bed—and that the mouth should be thoroughly cleansed by numerous brushings of the teeth and rinsings with 30 per cent. alcohol.

Position of the Patient.—For adults the sitting position is very satisfactory for diagnosis. For infants and children the dorsal position is better, because of better control of the patient. In foreign body cases, whether adults or children, the patient should always be recumbent. This is especially true of foreign bodies in the larynx and pharynx, which should never be touched unless the patient is in the Trendelenburg position. The author's remarks on anæsthesia are of especial interest and importance, and are contrary to what has been the custom in this country. He states that the greatest of recent progress in anæsthesia is towards the use of no anæsthetic at all. After a short period of tubal contact in bronchoscopy coughing lessens and often practically ceases, especially in infants, without any anæsthetic having been used. The author's views are as follows:—(1) In children under 6 no anæsthetic, general or local, should be used for direct laryngoscopy, peroral bronchoscopy, or œsophagoscopy, except that general anæsthesia may be advisable in the case of very sharp foreign bodies. (2) In adults no anæsthesia, general or local, is necessary for œsophagoscopy, for diagnosis or for foreign bodies, save in the case of very sharp or large foreign bodies. Local anæsthesia of the œsophagus is unnecessary. In bronchoscopy for diagnosis, anæsthesia of the larynx, including the epiglottis, is needed. In the last 107 bronchoscopies and œsophagoscopies for foreign bodies in children under 6 years of age, done in the author's clinique, no anæsthetic, general or local, has been used.

Indications for Bronchoscopy.—The author states the following as indications for bronchoscopy:—(1) The appearance in the radiograph

of a foreign body or of any suspicious shadow. (2) In any case in which there is a clear history of the patient having choked on a foreign body, and in which the foreign body has not been afterwards found. (3) In any case in which there are signs of stenosis of the trachea or of a bronchus. (4) In the absence of any history of foreign body, when there are signs of pulmonary tuberculosis but bacilli cannot be found in the sputum, especially if the physical signs are at the base, particularly the right base, and above all if there are physical signs of pleural effusion. (5) All cases of bronchiectasis should be bronchoscoped for foreign bodies, and also for local treatment. (6) Every case of dyspnœa, except, of course, pneumonia and similar well understood conditions. (7) Every case in which tracheotomy does not relieve the dyspnœa should be bronchoscoped to determine why the tracheal cannula does not give relief. (8) All cases of hæmoptysis which are not definitely proved to be tuberculous. (9) Every case of paralysis of the current nerve the cause of which is not positively known. (10) In any case of thoracic disease in which any element of doubt exists, valuable information may be gained by bronchoscopy. (11) In case of doubt as to whether bronchoscopy should be done or not, bronchoscopy should always be done.

As regards post-bronchoscopic subglottic œdema the author believes this is due in many cases to rough manipulation and to the introduction of tubes which are too large for the infant larynx: in other cases the supposed subglottic œdema is really due to the accumulation of secretions, and can be relieved by the passage of the tube, and he especially urges that all cases of post-bronchoscopic œdema require the passage of the bronchoscope before resorting to tracheotomy. The author uses tubes of 4 mm. and 5 mm. internal diameter for children under six. The author is a strong supporter of peroral as against tracheotomic bronchoscopy. In the palliative treatment of inoperable œsophageal cancerous stenosis the author has found œsophageal intubation very satisfactory, and by this means gastrostomy may be postponed—the author has had intubation tubes worn for quite a number of months without exciting ulceration. They were of course removed at frequent intervals for cleaning and were replaced. The author concludes his paper with the statement that all future progress will depend on those who have the time and the opportunity to develop an organisation with assistants and nurses well trained, and to develop by continual practice the skill which the musician must have with his instrument.

A Method of Radiographing the Larynx and Air Passages.

Rethi (*Zeitschr. f. Laryngol.*, 1913, Bd. vi. p. 28), dissatisfied with lateral pictures of the larynx, and knowing it impossible to take an antero-posterior picture by the ordinary method owing to the thickness of the spinal column, conceived the idea of overcoming this difficulty

culty by placing a film directly behind the larynx, in the hypopharynx, and making the exposure from before backwards. He was at once successful. It is very important that the films should be cut to the right size and properly packed. The film must be larger above to fit the hypopharynx, and narrower below to pass into the œsophagus, and the corners must be carefully rounded. The film is laid on a piece of cardboard, cut to the same size, and wrapped in tin-foil. The cardboard and film are then wrapped first in black light-proof paper, and secondly in wax-paper, so that it is both light- and water-tight. The pharynx and hypopharynx must be carefully anæsthetised. The photograph is taken with the patient lying down, and with the head slightly bent backwards, but when the film is introduced it must be slightly bent forwards. The film in its wrapping is made slippery with liquid paraffin, and is introduced with the second and third fingers of the left hand, and is pushed home with the same fingers of the right hand. The patient must now breathe quietly, and the exposure is made. The film is then removed with a pair of forceps. The length of exposure naturally depends on the apparatus: short exposures are less disagreeable to the patient. In the skiagram the body of the hyoid bone is clearly seen above. Occasionally the epiglottis can be seen below as a triangular shadow whose rounded upper border extends above the hyoid bone. The body of the thyroid cartilage appears as a shadow. The false cords, the true cords, and the sinus are clearly distinguishable. Anatomical alterations are readily recognised, such as a recurrent paralysis, while stenoses, the extent of malignant disease, can also be determined. A number of excellent skiagrams accompany the paper. G. W. P.

A Simple Method of Anæsthetising the Tympanic Membrane.

The question as to the best method of anæsthetising the tympanic membrane has long occupied the attention of aurists. The epidermal covering upon the external surface of the drumhead has proved a barrier to the absorption of cocaine, and under normal conditions it is impervious to fluids. Attempts have been made to destroy the epidermal barrier, and in the anæsthetic preparation used by Gray aniline oil was successfully employed for this purpose. Unfortunately, however, its use has not been without risk, as cases of aniline poisoning have been reported in this connection. In the solution suggested by Bonain, carbolic acid is used for the same purpose, but on more than one occasion necrosis of the drumhead has resulted. It is obvious, therefore, that a solution is required which will produce anæsthesia without risk to the patient or to his tympanic membrane. Blegvad (*Internat. Med. Cong.*, 1913) has substituted salicylic acid instead of carbolic, as it is a powerful solvent and is therefore capable of rendering the epithelium permeable to cocaine without producing

the necrosing action of the latter drug. It is at the same time a powerful disinfectant, so that it serves a double purpose. The solution which he employs contains one part of hydrochloride of cocaine and one part of salicylic acid to two parts of rectified spirit. Immediately before its application a few drops of a 1 per cent. of adrenalin are added to the amount which is used. This reduces the bleeding, and it is employed in this way, as otherwise the solution would not keep if the adrenalin was one of its constituent parts. About ten drops of the solution are instilled into the meatus, the patient lying for twenty minutes with this ear uppermost. There is no toxic action, even in children, nor is cocaine poisoning likely, as the fluid only contains 25 per cent. of cocaine, and only a small quantity is used. Very successful paracentesis of the drumhead is carried out in this way, while excellent results are also obtained in the incision of boils in the external meatus and in the removal of granulations. A. L. T.

DERMATOLOGY.

UNDER THE CHARGE OF

W. ALLAN JAMIESON, LL.D., M.D., AND R. CRANSTON LOW, M.B.

The Self-Styled "Hair Specialist."

The following from the pen of Dr. George T. Jackson (*Journ. Cut. Dis.*, July 1913) is well timed and deserves reproduction. The great amount of attention given by women, both rich and poor, and by some men, to the care of the hair has created a demand for workers to give such care. To meet this a vast horde of women and a few men have swept down on the community, styling themselves "Hair Specialists." Some of these are absolutely ignorant: some have picked up some information from experienced workers, or in certain "schools" established for the purpose of teaching the care of the hair: and some few have a little scientific knowledge derived from the study of books. All of them are law-breakers, many of them ignorantly, because they treat disease without a licence. It is hard to understand why a druggist, who often is well versed in the actions and uses of drugs, and the medical quack are liable to arrest and fines for prescribing treatment for diseases, while these "hair specialists" are allowed to go their more or less harmful way entirely unmolested. If "hair parlours" and their attendants existed only for the shampooing and dressing of the hair it would be bad enough, because such places, on account of a lack of hygienic regulations, tend to spread diseases of the scalp, like the barbers' shops do, but their proprietors claim to have a peculiar knowledge of the hair (it is often most peculiar), and to be able to *cure* all its diseases. To this end some of them apply strong acid preparations that set up violent inflammation of the scalp; massage

more or less violently every scalp, no matter what the condition of it may be, and thereby do damage to many a patient; singe the ends of the hair, a perfectly silly procedure; wash the hair with sponges and then dry it with a hot air blast, so as to hurry the process and get in another victim. These are a few of the harmful acts they do because they know no better and are anxious for money. The wrong information they give their dupes and the false ideas they spread are surprising. Still more surprising is the gullibility of those who go to them. The latter will willingly pay over large sums of money for simple solutions of soap, and for lotions which they are told contain rare and expensive ingredients, the profit on which swells the bank account of the vendors. These people do not appreciate that constitutional conditions of the patient often cause loss of hair, and until the former is improved the latter cannot be. It is a fraud for anyone to presume to treat the diseases of the hair without a knowledge of general medicine. The medical profession is largely responsible for the existence of these quacks, because it has thought it below its dignity to have anything to do with the hair. Doctors forget that it is a grievous thing for a woman to lose her hair. If they would remember this and refer their patients to some regular physician who knows something about the care of the hair, in case they do not desire to inform them themselves, they would do much to lessen the number of so-called hair and beauty parlours.

A Simple Method of Treating Lupus Vulgaris.

Nicolas and Moutot (*Bull. de la Soc. française de dermat. et de syph.*, July 1913, Paris) observe that new modes of treating lupus are always extolled at first and an imposing array of successes paraded, but when tried for a time there are often more failures than triumphs, and recourse has to be made to older and well-established methods. They have found that the best results in the greatest number of cases have been obtained by employing scarifications, followed immediately by cauterisations with a ten 10 cent. solution of chloride of zinc and painting with tincture of iodine. It may be said on the first glance this is neither original nor new. Yet this plan, when systematically carried out, has advantages over others. As regards the scarifications, (1) these should be cross-hatch ones, and should always extend widely beyond the apparent limit of the lesions; (2) they should be made as deeply as possible, till the sensation of a resistant plane is experienced on cutting; (3) in order to obtain the pulp recommended by Brocq-Lenglet it is advisable to vary the direction of the lines of cutting, otherwise the knife is liable to follow the track of previous incisions, and nodules are apt to escape or points not to be torn up. The ensuing hæmorrhage must be carefully checked; the incisions ought to be made to gape, and pressure by hydrophile gauze applied. Ten

minutes are sometimes required to procure complete cessation. When this has been obtained the surface, being still kept stretched, is sopped with a ten per cent. solution of chloride of zinc. This may also be painted on with a brush to ensure penetration. If a stronger solution is used it occasions sloughing: if a weaker, it is ineffective. A suitable caustic action is manifest when one sees the cross-hatching from the scarifications assume a white colour. The surface is now to be sopped with tincture of iodine. This latter procedure is repeated night and morning, the tincture of iodine employed being diluted with spirit of wine of 80 in the proportion of three-fourths to five-sixths. Cicatrisation is somewhat slow: it may not be entire till the fifth or sixth day, occasionally even not till the tenth or twelfth. A whitish, reticulated area is then visible, within which are still small islands of lupous tissue. At subsequent sittings these islands are attacked, and little by little the surface is transformed into a white cicatricial texture. If the scarifications have been carried to a sufficient depth the cure is complete and permanent: no fresh lupoid tissue develops under the scar. The cicatrix is pliant and level. The duration of treatment cannot be positively laid down, as instances of lupus vary so much in their character. The writers say the results they have had have been excellent, and compare favourably with those got by radio-therapy, the actual cautery, Finsen light, and carbonic snow. Cases of severity are cited in illustration, one in particular in which the form of a nose extensively diseased was perfectly preserved. The simplicity of the plan places it at the disposal of every practitioner.

Mesothorium in Dermatology.

Kuznitzky (*Arch. f. Dermat. u. Syph.*, Vienna, 1913) has been experimenting with this as a substitute for radium. It is employed enclosed in capsules in the form of a fine powder. The size of these, owing to the price of mesothorium, is expressed in millimetres. One milligramme of mesothorium costs at present about £7, 10s. (According to *Eczymata* of 5th September, however, it is reported that mesothorium can be obtained by a process still secret from monazite sand found in large quantities in South America. Each ton of the sand yields a grain of the element. Should this prove correct the price will be much reduced.) For the nonce widespread surface skin diseases are not suitable for the treatment. If a smaller quantity is spread over a larger area a longer exposure is necessitated, and inflammation may be produced by the β rays which are given off. His observations were made by using capsules whose diameter was 5, 10, or 15 mm., and the total quantity used did not exceed 20 mg. The close relationship which exists between Roentgen, radium, and mesothorium emanations would lead one to expect that only those skin diseases which have

proved amenable to X-rays would be favourably influenced, but it has been learned that mesothorium can be employed with advantage concurrently with ultra violet rays or with carbonic snow. Mesothorium seems to combine some of the benefits derived from the other processes named, as it possesses not merely the specifically acting β and γ rays, but is valuable as a curative agent by inducing an inflammatory reaction while permeating the tissues. Mesothorium has a softer action than radium. This constitutes no defect, since it contributes to the absorption and dispersion of inflammatory products or new formations. In using the mesothorium, as a rule no filtration media were employed: the talc covering of the capsule was placed in immediate contact with the skin. The time allowed for radiation varied from twenty minutes to two hours. The reaction ensued one or two days after irradiation, commencing as a vivid erythema, becoming duskier each day, till in course of a week it passed into a brownish red. About this time there appeared serous exudation from the irradiated part, and superficial necrosis of the epithelium. This grew into a hardish yellow crust, firmly attached and surrounded by an inflammatory halo. The separation of the crust took some time, and this could not readily be abbreviated. The resulting scar was sometimes scarcely perceptible, sometimes bluish-white. Of twenty-four cases of cancer of the skin nineteen were cured. There were two recurrences, but it must be borne in mind that the technique is still imperfect. In isolated angiomata it seems to rival if not be superior to carbonic snow. Lupus erythematosus appears to be most favourably influenced by mesothorium. Recurrences are few, and he gives it a place above the quartz lamp and carbonic snow.

The Employment of a Solution of Mastiche in Dermatology.

Hammer (*Dermatol. Woch.*, 24th May 1913) says that solutions of mastiche are regarded as of much value in surgery, particularly military surgery, in the treatment of wounds. Mastiche is a gum resin obtained from the lentisk tree. Though chiefly used for making varnishes, it has for years been had recourse to for fastening bandages. V. Oettingen in the Japanese-Russian war availed himself of a solution of mastiche in chloroform, with the addition of a few drops of linseed oil, and this he named mastisol. Now benzine with a small proportion of turpentine forms the solvent. Hoffmeister recommends a 20 per cent. ethereal solution. It is a satisfaction to dermatologists that surgery has gradually abandoned efforts to sterilise the skin. The systematic mistreatment previous to an operation with soap, hot water, and a brush, continued for a quarter of an hour, has always horrified Hammer. It is astonishing that people would allow their skins to be so handled. In the immediate neighbourhood of the operation wound the virulence of organisms is lessened by swabbing with

spirit, or by the application of tincture of iodine, etc. The solution of mastiche can now be added to the protective measures at our disposal. In selecting such a safeguard the property most desiderated is that it should cause no irritation, else it may promote the development of dormant germs. The mastiche solution possesses this quality. It does not irritate the healthy skin, but, what is much more remarkable, hardly disturbs an inflamed and eczematous integument. Even fresh or purulent wounds scarcely show any reaction, while in these collodion readily induces pus formation, and the same may be said of glycerine jellies. He has cured long-standing fissures at the angles of the mouth by placing small pieces of gauze impregnated with mastisol in the bend. Obstinate cracks on the hands, and fissures about the anus can be similarly dealt with. In lupus good results have been obtained by freely spreading on mastisol to which 10 per cent. of pyrogallic acid has been added. Over this a single layer of gauze is fitted. This occasions much less pain than an ointment, and produces rapid contraction of the lupus deposit. This may be persisted in for a considerable time. One would think that this method might be found suitable for some examples of lupus erythematosus. W. A. J.

INFECTIOUS DISEASES.

UNDER THE CHARGE OF

CLAUDE B. KER, M.D.

The Control of Diphtheria.

Delyannis (*Wien. Klin. Woch.*, 28th August 1913) describes two outbreaks of diphtheria in institutions which he was able to check by isolating healthy carriers of the bacillus, and pleads for the universal adoption of this method as the most rational one for combating the disease. He does not approve of prophylactic injections except for certain selected cases, *e.g.*, members of a family which has shown itself particularly susceptible to the diphtheria virus, convalescents after exhausting illness, young children, and also during the simultaneous prevalence of other infectious diseases. His objection that only a three weeks' immunity is to be obtained, and that therefore subsequent injections with possible risk of anaphylaxis may have to be given, does not appear very sound, as, surely, three weeks give the public health authorities plenty of time to deal with the cause of an outbreak, and temporary protection is usually all that is needed. Delyannis raises an interesting point when he doubts the reliability of the virulence test. As is well known, carriers are frequently released from isolation if their germs are not found to be virulent to small animals. The suggestion of Delyannis that a negative test on a laboratory animal does not necessarily prove that the bacillus in question is non-virulent

to children is most disquieting. He points out that the virulence of the germs harboured by chronic carriers varies considerably from day to day, and that carriers from whom non-virulent organisms have been cultivated have themselves at a later date developed the disease. No case of this sort has come under my own notice, but the importance of obtaining corroborative evidence on the point is obvious. Delyannis thinks there should be no difficulty in isolating carriers, who do not, under ordinary conditions, number more than 6 per cent. to 10 per cent. of the contacts. He quotes figures, moreover, to prove that their detention need not be long, as they become germ-free in 63 per cent. of cases within a week, and in 94 per cent. within 2½ weeks. In Edinburgh we have lately been isolating carriers from diphtheria houses, and it is certainly true that only exceptionally does the hospital detention exceed a fortnight. But to systematically isolate all carriers would require an enormous number of beds set apart for the purpose.

The Treatment of Diphtheria Carriers with Staphylococcus Cultures.

The difficulty of getting rid of diphtheria bacilli from the throats of convalescents or carriers is a very real one, and antiseptic applications are often very unsatisfactory. For some years experiments have been made, chiefly by American physicians, with cultures of the staphylococcus aureus, that particular micro-organism being supposed to be antagonistic to the diphtheria bacillus or capable of overgrowing it in the human fauces. Rolleston (*Metropolitan Asylums Board Reports*, 1912) gives a summary of the literature on the subject, and concludes that only some 50 cases have hitherto been treated in this manner. He was, however, encouraged by the favourable reports given, to apply the method to 8 cases under his care, and his results are very instructive and interesting. He employed a pure, 18-to-24-hours-old culture in bouillon of the staphylococcus pyogenes aureus, and sprayed the fauces and nasal passages of the patients three or four times daily until a negative culture was obtained. If, after a few days' interval, the culture was once more positive, the spraying process was resumed. Although in the literature there was no mention of any reaction, in all except one of Rolleston's cases a mild form of sore throat was produced within 2 or 3 days of starting the treatment, and in some patients there was, in addition, marked constitutional disturbance. In 6 faucial cases the cultures proved negative within 2 to 7 days after the treatment was commenced, in 2 nasal cases, however, the method was ineffective.

Alden (*Journ. Amer. Med. Assoc.*, 14th June 1913) has employed this method in 16 cases of persistence of diphtheria bacilli. He used a composite culture made by mixing equal portions of three different

strains of the staphylococcus pyogenes aureus isolated from throat cultures. These were grown on agar and afterwards transferred to broth. The culture, issued in bottles, was sprayed from an atomiser on to the throat and nasal passages. In all but one of the patients the negative cultures were obtained within a week of the application of the treatment. In one case the method proved an absolute failure. Alden did not notice any serious constitutional disturbance in this group of cases, nor was there an instance of otitis following the treatment. In a case reported in detail the throat was red and swollen for one day, and in two others slight sore throat is reported.

Rolleston's cases, although fewer in number than Alden's, appear the more convincing. It is perhaps a minor point to note that they apparently had no other treatment than the staphylococcus spray, whereas Alden's cases were treated with antiseptic gargles or silver nitrate swabs. The general futility of antiseptics in clearing the throat of persistent bacilli would lead us to attach very little importance to this distinction; but Rolleston took the precaution of only dealing with patients who had carried the bacillus 46 days or longer, while Alden's cases were in most instances of only four weeks' duration. In other words the latter was dealing with patients who might be reasonably expected to give negative cultures in a fortnight after the treatment commenced (De Witt found that 87 per cent. of diphtheria patients are bacillus-free in 35 days from the onset), whereas the former commenced the staphylococcus injections at a period when the persistence of bacilli suggests the conclusion that the case is one of those which may remain infectious for a very long time. Nevertheless it is undoubtedly an impressive fact that, taking both groups together, out of 24 individuals no less than 21 gave negative cultures within a week of the first use of the staphylococcus spray, and Rolleston's opinion that this method deserves an exhaustive trial appears fully justified.

Accidents following Subdural Injection of Anti-meningitis Serum.

Flexner (*Journ. Amer. Med. Assoc.*, 21st June 1913) discusses the risk of subdural injections of serum. Accidents have been occasionally reported, sudden death or collapse taking place very shortly after injection. A feature in many instances has been the failure of the respiration before that of the heart, and this has led Kramer to suggest that the real cause of the accident is the phenol preservative which is added to the serum. Flexner points out, however, that this can hardly be the case, as similar accidents are known to follow the subdural injection of Dopter's serum, which does not contain any preservative at all. Moreover, phenolised serum has been injected, with no bad results, directly into the lateral ventricles, which offer

a much more direct path to the fourth ventricle and the respiratory centre than is likely to be obtained by lumbar subdural injection. Another possible cause of fatal collapse is anaphylaxis, but this again does not meet the case, as not only are accidents observed in persons who have never received horse-serum previously, but they have been observed following the second or third injections of serum repeated at short intervals. Flexner considers that there are two possible explanations—first, that the severe effects are due to the toxins liberated by the rapid dissolution of the meningococci by the immune serum; second, that they are the result of excessive intra-cranial pressure. Against the first view it may be argued that, even when the meningococci in the cerebro-spinal fluid are very few in number, there is no immunity from these unfortunate occurrences, and that accidents have also occurred in pneumococcal meningitis treated with anti-meningococcic serum, where one would not expect such bacteriolysis. The conclusion, therefore, is that increased intra-cranial pressure is reponsible for the accidents, and Flexner observes that the fatal cases reported seem for the most part to have received full doses injected by a syringe. He emphasises his original recommendation that in treating cerebro-spinal meningitis it is wise to inject somewhat less serum than the amount of spinal fluid withdrawn, and considers that injection by gravity is the wisest method to employ. He reminds us that sudden death in epidemic meningitis is not an infrequent occurrence, and that death has sometimes occurred at the moment the physician was preparing to give an injection. In any case, however, the dangers of the disease are so real and the risk of accidents is so comparatively trivial that it would be most unfortunate if the only successful treatment for this very fatal disease was to be discredited on this account.

Paratyphoid Fever after Typhoid Fever.

Chevrel (*Progrès Méd.*, 23rd August 1913) reports the case of a little girl who 3 years after an averagely severe attack of typhoid fever suffered from a typical attack of fever due to infection by the bacillus paratyphosus (B). He discusses the question as to how far one of these infections confers any immunity against the other. Experiments on animals appear to have been contradictory. There is clinical proof, however, that it is possible for the two diseases to succeed each other in the same subject, and this permits the conclusion that the one infection does not confer immunity, or confers only partial immunity against the other. It must be remembered, however, that second attacks of typhoid fever, if not common, certainly occur, and that therefore a disease which does not necessarily confer immunity against itself is still less certain to confer it against infection by another bacillus, however closely allied. Chevrel considers it probable that some

immunity does exist nevertheless. He mentions some cases of Roussel (*Bull. Méd. de l'Algérie*, 25th January 1913) which are analogous to that reported by himself. One patient suffered from paratyphoid fever (B) within a year of an ordinary typhoid attack: another had first a paratyphoid (B) infection, and nine months later took typhoid fever: two others were affected by the bacillus paratyphosus (A), one and four months respectively after being vaccinated against typhoid fever. Chevrel also quotes Levy and Gaehtgens, who have reported the case of a patient who took typhoid fever during convalescence from an attack of paratyphoid infection. We may here allude also to the very interesting cases reported by Watt (*Lancet*, 19th July 1913), in both of which a mild paratyphoid attack was followed by a moderately severe type of typhoid fever. Had these cases been less carefully investigated the second fever would have been regarded as a relapse. Watt points out that, in the opinion of Army medical officers in India, inoculations with a typhoid vaccine confer no immunity to paratyphoid fever, although it must be recollected that their experience applies chiefly to the (A) type. We have seen that Roussel's cases support this view. In the face of this evidence it would be foolish to count on one of these infections giving any protection against the other. C. B. K.

MENTAL DISEASES.

UNDER THE CHARGE OF

JAMES MIDDLEMASS, M.D., AND DOUGLAS M'RAE, M.D.

A Case of General Paralysis without Cerebro-spinal Lymphocytosis.

This case is recorded by Drs. Kahn and Mercier at a meeting of the Société de Psychiatrie of Paris, in October 1912 (*L'Encéph.*, November 1912, p. 369). The patient was a butcher, 39 years of age, who had had several seizures with temporary paralysis during the preceding eight years. He had gradually become somewhat demented, suffered from megalomania, and had violent fits of temper. Examination showed many of the ordinary physical signs of general paralysis. The Wassermann reaction was positive, but on the four occasions on which the cerebro-spinal fluid was examined there was no evidence of lymphocytosis. It is evident, therefore, that this symptom is not an invariable accompaniment of general paralysis. The writers, however, state that there is a possibility that the case may be one of syphilitic arteritis, only a post-mortem examination being capable of settling this point. Even so it would be expected that this condition would also cause such meningeal disturbance as to produce a lymphocytosis.

The Wassermann Reaction and Mental Disease.

Drs. Hermann and Hollander submitted all the female patients admitted to the Mons Asylum in the course of the year 1912 to the Wassermann test, and in this paper give the general results (*Bull. de l'Acad. de Méd. de Belgique*, January 1913, p. 793). They employed the original method and not any of its later modifications. One hundred and fifty patients were admitted, and for various reasons 14 were not tested. Of the 136 remaining 21 were general paralytics, and all gave a positive test; 15 others also gave a positive reaction, and the mental diseases from which they suffered were very various. Three were cases of dementia præcox out of a total of 22; 2 were senile dements out of 13; and 2 were cases of degeneration and disequilibration out of 2 such cases. The others were single instances only. This gives a total percentage of 26·47 in all cases examined. Another examination was carried out for a second year in all cases of general paralysis which came under their notice. Of these, including the 21 already mentioned, there were 62, and 56 gave a positive reaction, a percentage of 90·32. In the 6 negative cases the diagnosis was not open to much doubt, being confirmed in at least 2 cases by post-mortem examination. In other two cases the test was negative once, but was positive on a subsequent test. In two of those which gave a negative test syphilis had previously with certainty been acquired. There are, therefore, cases of undoubted syphilis which give a negative reaction. The 15 non-paralytic cases are shortly described, and it is concluded that the existence of syphilis was only an incidental factor. The relation of other tests to the Wassermann reaction was also studied, and the results are recorded. These other tests were applied to the cerebro-spinal fluid in three ways—the Wassermann reaction, the counting of the lymphocytes, and the estimation of the amount of globulin. A table is given showing the results of all these tests in certain non-paralytic cases.

The conclusions come to by the authors are:—From the point of view of etiology and diagnosis a negative reaction has no significance. The reaction is of the greatest service in confirming the diagnosis of general paralysis. Only clinical observation is of service in differentiating general paralysis from cerebral syphilis and syphilitic dementia. The absence of pathological changes in the cerebro-spinal fluid, with a positive reaction in the blood does not exclude the possibility of the existence of syphilitic arterio-sclerosis as a cause of mental symptoms. The testing of the cerebro-spinal fluid is of great assistance in throwing light on obscure cases, especially on dementia at advanced ages.

Progressive Epileptic Myoclonus.

A case of this kind is reported by Drs. Jacquiri and Marchand (*L'Encéph.*, March 1913, p. 205). The patient was a girl of 19

admitted to the St. Madeleine Asylum in September 1910. At the age of 3 she had had a few convulsive seizures. When ten years old she began to suffer from epileptic fits as the result of a fright. At first they were infrequent, at intervals of six months. As time went on they became more and more frequent, in the end occurring nearly every day. The myoclonic attacks began about five years after the epilepsy and were present in the face, lips, tongue, and extremities, especially the hands. The speech resembled somewhat that of a general paralytic. This disease could, however, be definitely excluded for various reasons. The muscular contractions were rapid, sudden, forcible, analogous to that produced by the electric discharge. They varied in intensity and were not painful nor systematised. The flexors were more markedly affected than the extensors. They disappeared during sleep, and were only very slightly under voluntary control. They usually appeared before the fit and got gradually more severe until the fit occurred, when they passed off, and remained in abeyance till the approach of the next fit. The cerebro-spinal fluid was withdrawn for purposes of examination and was found to be under very considerable pressure. When the fluid (10 c.c.) had been withdrawn it was noticed that the muscular twitchings were lessened. During her residence in the asylum—a period of twenty-one months—lumbar puncture was performed forty-three times without untoward results. The fits, as well as the twitchings, were reduced in number and severity, and on every occasion the pressure was found to be very considerably above the normal. In the course of time phthisis developed and progressed rapidly, the patient dying 21 months after admission.

The post-mortem examination did not reveal any characteristic naked-eye change. On microscopic examination of various convolutions there was found to be considerable atrophy of the ganglion cells of the cortex. The giant cells were markedly smaller than normal, and the chromophile granules were powdery and disseminated throughout the body of the cell. The dendrites were small, and there was no undue pigmentation. The vessels appeared healthy. The tangential fibres were atrophied, and especially at the bases of sulci there was a marked development of delicate fibres traceable to neuroglia cells. The pia tended to adhere in that situation. Two figures are given showing these morbid changes. The cells of the anterior horns of the cord showed the same changes as the motor cells of the cortex. The pathological conditions found in this case resemble those previously described in three cases by Rossi and Gonzales. The authors are inclined to attach most significance to the degeneration of the cortical motor cells, the atrophy of the tangential fibres, and the superficial sclerosis. They somewhat resemble the changes usually found more

extensively and intensively in general paralysis, in which disease muscular twitchings in restricted areas are very common.

Traumatic Neuroses and Compensation.

The relation of compensation and sickness benefit to diseases usually regarded as functional has of late assumed very great importance, and there is every reason to expect it will attract more attention in the future. It is a well-known statistical fact that in countries in which it is the practice to make a single payment as compensation for accident the number of cases of traumatic neuroses is only a fraction of what it is where weekly payments are the rule. Professor Nägeli of Tübingen relates (*Corr.-Blatt. für Schweiz. Aerzte*, 10th May 1913, p. 577) a case which bears strongly on this point. A woman of 40 fell off a country waggon in the course of her work. She was said to have received injuries to her back, neck, and kidneys, and was given the usual monthly compensation. As time went on she did not improve but complained of fearful pain in the head and back, with periodical attacks of sickness and various other functional symptoms. Repeated examination failed to reveal any organic disease. It was also observed that whenever the period approached for a re-examination of her case by the Court for the assessment of compensation she became markedly worse. The case dragged on for 18 years, and during all that time she had received diminishing compensation, and had been declared incapable of full working capacity. She could look after herself at home and even walk a considerable distance to visit relations, but was unable to do any outdoor work or earn her living. Professor Näglei is strongly of opinion that, if the constantly recurring stimulus to the recall of the effects of the accident which the periodical assessment of compensation brought with it had been removed by the payment of a single lump sum, the patient would in all likelihood have soon got over the effects of the accident and made a complete recovery. It is to be regretted that the weaknesses of human nature are not taken more into account by those who have framed some recent, so-called social, legislation. J. M.

Mind and Motive.

An address on Criminal Lunacy, by Dr. Nicolson, Lord Chancellor's Visitor in Lunacy (*Lancet*, 13th September 1913), being a summary of his almost half a century's experience of the subject. In opening, he remarks: "This hydra-headed conjunction of crime and insanity forces itself upon our acquaintance through miserable lives and surroundings, through wretched and disordered phases of mind, through noxious

records of jealousy and drink and of sexual and savage passions, and through manifold experiences taught in reformatories, prisons, and asylums."

Crime (unlike insanity), he holds, is neither a mental condition nor a neurosis, but is in the main an occupation or business taken up as the outcome of environment, education, training and circumstances as a means of livelihood. It cannot be regarded as a hereditary transmission any more than shoemaking or agricultural labour in successive generations. He stoutly asserts that the children of most intellectual and respectable parentage would be bound to succumb morally, if reared in a criminal atmosphere. He holds no brief for the faddist, who would make himself believe that all murderers are insane. Criminal bent in the sane, he shows, is towards thieving, while the tendency among the insane is in five-eighths of the cases towards homicide or personal violence.

The question of insanity in any trivial case of crime has a peculiar interest, but when the offence is murder involving the possibility of the death penalty, the interest to medical men becomes absorbing and laden with heavy responsibility. The following paragraph is worthy of careful consideration, coming as it does from one of Dr. Nicolson's ripe experience :—"Insanity, and all the conditions leading up to it, are the *bête-noire* of the medical practitioner, for in the first place he is brought into contact with the domestic difficulties and troubles of his patients at an inconvenient and disagreeable angle, especially if he has to send the head of the house or any of its members to an asylum ; and secondly, his education and training for his profession have been so far neglected that he has not had the opportunity of dealing practically with the insane. I have always held that no medical man is fully equipped for the practice of his profession unless he has had some months' experience —the more the better—as a medical officer in an asylum. To this lack of experience is no doubt traceable much of the criminal lunacy which is preventable, and which would be prevented if certification and if removal to an asylum or to proper care and supervision were not so long delayed." He holds out hopes that the provisions of the Mental Deficiency Act will afford a more ready means of preventing weaklings and mental defectives from qualifying for criminal lunacy.

With regard to the medical jurisprudence of insanity, he states that the broad guiding principles are two in number: (1) That no lunatic shall be hanged ; (2) that no mere criminal shall on the plea of insanity be allowed to escape due punishment for his act of murder. If from lack of experience or insufficient examination into the mental condition, motives and circumstances, the medical man fails to trace the insanity which does exist, he contributes to the hanging of an insane person. If, on the other hand, he declares for sanity from

sentiment or on insufficient grounds, or if he fails to detect the malingerer, he violates the second principle, and is wanting in his duty to the public. The range of examination includes the prisoner's mental condition generally and at the time of the alleged murder, the circumstances and mode of the murder itself. In some cases strange beliefs and morbid fancies show themselves in the previous life-history of the individual which, although in themselves seemingly remote, may afford some clue or explanation as to why the deed was committed. He would impress upon the medical examiner the importance of discovering the *motive* which is the *crux* in forming an opinion as to the existence of insanity.

With regard to the vexed question of the prisoner's "knowledge of right and wrong," he considers it "not a bad rough-and-ready test in a court of law." If the medical witness can say (1) that the prisoner did not know right from wrong, let him say so; (2) if he has an opportunity of saying prisoner knew right from wrong, but that his power of self-control was in abeyance or lost, let him say so; (3) if he believes prisoner knew right from wrong absolutely, let him say so. In this connection, however, he draws attention to the well-known fact that there are many insane persons, who show that they quite realise that they have done wrong, either by giving themselves up to the police or by escaping. Thus a "knowledge of right and wrong" by itself is no conclusive test.

Mental enfeeblement can be demonstrated in a large number of cases as a precursor of the insanity which led to the murder. It causes failure in business or occupation or in the affairs of life generally. It is apt to develop into more active mental derangement under the stress of poverty, over-anxiety, domestic trouble, etc., especially when combined with alcoholic intemperance. The enfeeblement may be (1) congenital or from developmental arrest; (2) the result of idiopathic cerebral lesions, softenings, senility, etc.; (3) cerebral traumatism; or (4) associated with neurasthenia, malnutrition, and drink. But the influence of these conditions on a prisoner's mental capacity must be clearly discernible and carefully considered and weighed, as in spite of their presence punishable crime may still be referable to ordinary malicious motives.

The question of infidelity, which so commonly arises, is often extremely difficult, as the belief in the prisoner's mind may be well-founded or be an absolutely groundless delusion.

With regard to alcoholic excess in relation to murder, he refers to three phases: (1) Delirium tremens is a recognised brain disease in which dangerous delusions are apt to prevail, and juries, he says, are not unwilling to record their verdict that the murder was the act of an insane person; (2) drunkenness to oblivion (blind-drunk) in itself

is not sufficient to escape capital punishment: the derangement of consciousness and volition not being a disease of the brain, but the consequence of the individual's wilful act: (3) simple drunkenness may convert a harmless and inoffensive lunatic into a murderer. Mere drunkenness, however, should never be an excuse for relieving a sane individual of criminal responsibility.

Epilepsy has a real and important significance in homicidal cases, though compatible with sane and insane mental states. In either case, and in connection with the fits, homicide may be committed in complete oblivion during and after the deed, but it is devoid of premeditated or murderous intent. Motive is absent, although some amount of association of ideas with thoughts or acts occurring during the pre-epileptic stage is discoverable.

Delusions, with or without hallucinations, are the most frequent cause of murder by an insane person, and are usually freely expressed by him in justification for his conduct. Great difficulty does arise, however, when a prisoner is uncommunicative as to details or says he has no recollection of the circumstances of the act. Prolonged observation may reveal the existence of delusions or other indications of which the insanity was the outcome, and against whose influence the patient may have struggled for a considerable time. Loss of memory or obliviousness of the act should never be relied upon as a sole indication of epilepsy or insanity. Single and simple automatic acts are often completely forgotten in epilepsy, but in all his experience Dr. Nicolson "has never been able to satisfy himself in any case of drink or insanity, where murder has been committed, that the recollection of a series of purposive and exceptional acts extending over a number of hours and involving preparation and including all the circumstances of the act itself, has been absolutely obliterated from the memory."

Feigned insanity requires tactful dealing and a protracted examination. The impostor not infrequently excites suspicion by repeating questions to give himself time to make the best kind of answer. But his mannerisms and mode of response serve to give him away.

A family history of insanity is no guide as to the prisoner's condition of mind or motive, but may help to corroborate one's opinion once he is found to be insane. Many anomalous predisposing conditions, such as teething fits, injuries and fevers in childhood, cannot be of much weight in the case of a man who has coped with the responsibilities of adult social conditions. Provocation and premeditation are points that must be considered in all cases.

On Attempted Suicide.

This paper (*Journ. Ment. Sci.*, July 1913), by Dr. Norwood East of the Manchester Prison, consists of an exhaustive analysis of 1000 con-

secutive cases of persons charged with the misdemeanour of attempted suicide. As prison doctor and medical adviser to the Courts, the prisoners came under his observation for report as to their sanity or otherwise. His cases are drawn from the poorest classes, and for such he makes out a strong argument in support of the procedure of remand, since the prison hospital affords them a much-needed opportunity for proper medical and nursing treatment. On this account he considers that to remove the offence from the list of misdemeanours would in many cases prove disastrous to individuals in the direct need of care and treatment, whether sane or insane. Indeed the insane, he asserts, often come under medical observation for the first time in consequence of this one Act and make good their recovery in the prison hospital. Few will disagree with him that imprisonment seems desirable in the case of persons who repeatedly make suicidal attempts while under the influence of drink. Among the author's conclusions from experience and study may be noted: Attempted suicide and suicide are both adversely affected by unemployment and drunkenness, and both are frequent in hot months. Suicide is more common in the early hours, while attempted suicide is more usual towards the end of the day. Abortive suicides are more common than actual suicide among young persons. Actual suicide is markedly influenced by the married state, although the effect of children is variable, as compared with attempted suicide. There is a family history of paternal intemperance in 27 per cent. and of insanity in 10 per cent. of the cases of attempted suicide. The commonest causes of attempts at suicide are alcoholism, unemployment and destitution, domestic troubles and insanity, and for ulterior purposes. Frequently more than one cause exists. When the result of alcoholic impulse alone the attempt is not remembered. Alcohol incites from impulse, from post-alcoholic depression, and in cases of weakmindedness or insanity. An attempt during a first intoxication is very rare. Alcohol, wholly or partially, was found to be a cause in nearly 40 per cent. of the cases. Attempted suicide is more frequent among those charged with offences against the person than against property. Among the weakminded the cause may be very trivial. Insanity is very much more likely to cause suicide than attempted suicide. (One would infer from this that there must be an appalling amount of insanity in the community that never comes under lunacy cognisance, unless one disregards the almost universal verdict of the coroner's jury in the estimation.) Dr. East considers that preventive treatment is urgently called for, and believes this could be attained by a more extensive provision of mental out-patient departments at large hospitals, and hospitals for uncertified cases of mental disease. He is still more strongly of opinion that preventive treatment proper can

only be established by improvements in social and economic conditions, by diminishing intemperance of all kinds, by the cultivation of robust religious convictions, and by causing youth to become more tolerant of discipline—a modernised gospel of perfection, that bears a striking resemblance to the Ten Commandments, too simple in their expression for the intellectual standard of these days of so-called "education."

D. M·R.

NEW BOOKS.

Old Age: Its Care and Treatment in Health and Disease. By ROBERT SAUNDBY, M.D.(Edin). Pp. vii. + 312. London: Edward Arnold. 1913. Price 7s. 6d. net.

BOOKS on old age have been written, not a few, from the days of Cicero onwards, and medical men, whose work so largely consists in trying to make the best of damaged organs and organisms, have contributed a good many of them. Most of those published in this country of recent years have dealt with some one part of the subject—the heart, the arteries, the prostate—and we welcome heartily the author's presentation of the subject. There certainly is "room for a book which should bring together the various contributions made to it in modern times."

The first chapter contains an interesting collection of cases where an unusual age has been attained in vigour and mental and bodily activity. An account of the changes in normal old age follows. Most of the book is occupied with an account of the diseases met with in old age, arranged according to the various systems of the body. That of the diseases of the digestive system is specially full and good, though the condemnation of the stomach-tube as a means of treatment (p. 123) seems rather too sweeping. Diathetic diseases and general infectious diseases follow, and a chapter on regimen, dietary, and general treatment closes the text. There are appendices of medicinal and dietary recipes, etc., a useful table of physical exercises for elderly people, and a bibliography. A good index renders the contents of the book readily accessible.

The volume is pleasant to read, though sentences here and there, from defects of punctuation or expression, are not so clear as they might be. It bears the stamp of a large experience and a sound judgment, as well as extensive reading. Occasionally it wanders from its subject, as where 7 pages (pp. 108-115) are devoted to "true asthma," "by no means in any special degree a disorder of old age"! but such lapses are few.

A curious error occurs in the appendix which gives the constitution of various foods, followed by "Wines, etc." (p. 296). The latter

contain no alcohol; instead of it they have surprisingly nutritious contents. Champagne, for example, is credited with "protein 18·5, fat 10·5, carbohydrate 16·2, water 71" (116·2 per cent. in all). We suspect that such an analysis must have been inspired by a beverage less nourishing but more stimulating than that which it professes to represent! Fortunately, no one into whose hands the book comes is likely to be misled. We can thoroughly commend Dr. Saundby's book to our readers, who will find it a wise, instructive guide in this department of their work.

Protein and Nutrition. By Dr. M. Hindhede, Director of the Hindhede Laboratory for Nutrition Research established by the Danish Government. Pp. 201. London: Ewart, Seymour & Co., Ltd. Price 7s. 6d.

It is fairly accurate to describe Dr. Hindhede as being to Denmark what Chittenden has been to America, the enthusiastic exponent of a low-protein diet, with the addition that he has been a lifelong practitioner of the doctrines he preaches. Our present author, like Chittenden, cuts down the Voit standard of 120 grammes daily protein by about half: he, indeed, has gone further, and shows dieting experiments in which the American minimum has been considerably reduced without a disturbance of the nitrogen balance. But the daily aggregate of calories is considerably above the American level, and practically coincides with the 3000 standard of Voit. Dr. Hindhede's diet is thus quite a liberal one *qua* caloric value, and its poverty in protein is compensated by an abundance of carbohydrate. And of the carbohydrate foods his prime favourite is the potato. So great is the author's admiration for this tuber as human food, and such an important part does it play in his laboratory experiments, that it might well have obtained a place on the title-page of his book.

In 1911 the Danish Government placed a laboratory at the disposal of the author, so that rigid scientific tests could be applied to his opinions and theories, which had already become matter of public controversy in Denmark. Some of these "balance" experiments, carried out in the laboratory, are included in the volume, and form its most valuable and interesting sections, especially as they are preceded by comparable data from the researches of Voit, Hirschfeld, Chittenden, and M'Kay.

The practical outcome of Dr. Hindhede's creed with regard to food may be given in his description of the dietetic régime of his home (p. 6):—"Very little meat is eaten in our house—most days we have none at all—and I am always exhorting my children to eat plenty of porridge, bread, and potatoes, and very sparingly of meat, eggs, etc. We adults as well as children eat a great quantity of potatoes, not

only at dinner but also at supper." There seems to be no doubt that on this simple though abundant fare he and his family have maintained good health. The book is a very zealous exhortation to others to do likewise. It is marked throughout by a very fond and partial enthusiasm of the author for his own views, and by rather truculent criticism of the opinions of others. But in spite of many faults of tone and extravagances of statement it is worth careful study, and is a genuine and original addition to the perplexing but highly important subject of dietetics.

Diet Lists of the Presbyterian Hospital, New York City. By HERBERT S. CARTER, A.M., M.D. Pp. 129. Philadelphia and London: W. B. Saunders Co. 1913. Price 5s. net.

THE main portion of this useful little volume is devoted to diet schedules suitable for varying conditions of diseases as treated in hospitals. Full details both as to the articles of food and their arrangement in the various meals are given, and at the end of each special diet thus described its content of protein, carbohydrate, and fat, and its caloric value are added. These diet schedules have clearly been drawn up under the influence of the low-protein teaching of Chittenden, and in the ordinary full diet and the convalescent diet a mean has been struck between Chittenden's daily ration of 60 grammes of protein and the older 120-grammes standard. A variety of special diets, *e.g.*, for typhoid fever, diabetes, dyspeptic conditions, etc., are also included, each being prefaced by a very brief discussion of the principles governing the choice of the special foods. The book also contains a large amount of appendical matter, among which may be mentioned a very useful list of special recipes and a transcript of Bulletin 28 of the American Department of Agriculture, giving the average chemical composition of all the common and important human foods.

The book is a useful guide in the practical aspects of dietetics, and gives in its diet lists the applications of modern views and theories as to nutrition in health and disease.

The Bradshaw Lecture on the Diagnosis and Treatment of Incipient Pulmonary Tuberculosis. By D. B. LEES, M.D., F.R.C.P. Pp. viii. + 116. London: H. K. Lewis. 1913. Price 5s. net.

IN this book are included the Bradshaw Lecture, a lecture delivered later at Cambridge, and four appendices, three consisting of reprints previously published by the author, giving details of cases treated by his special method, and the other is a short reprint entitled "The

Conquest of Tuberculosis." This book will prove most useful to the general practitioner, because the author takes great pains to show how the early diagnosis of pulmonary tuberculosis can be ascertained by careful percussion. The small areas of dulness so obtained have frequently been checked by X-ray examination. He says that a "practitioner who has learned to trust his own percussion does not need radiography to enable him to arrive at a sound conclusion," but he advises those who are not very confident percussors to send the patient to an expert radiographer for his report.

The author issues a warning about the worthlessness of a negative bacteriological examination as a proof of the absence of tuberculosis. He then passes on to a full description of his antiseptic inhalation treatment by the aid of a Yeo's inhaler, which must be worn night and day, except at meal times. He also gives advice as to the ordinary hygienic and dietetic treatment of the patient.

In a short discussion on the value of tuberculin he warns new tuberculosis officers to guard against a too confident belief that "the only form of treatment which gives a chance of recovery is to transfer the patient to a sanatorium and then inject him with tuberculin."

The Modern Hospital. By J. A. Hornsby, M.D., and R. E. Schmidt, Architect. Philadelphia: W. B. Saunders Co. 1913. Price 30s. net.

This volume is undoubtedly intended to deal with the subject in its entirety, not to be merely a bureau of useful information, but also a guide. This being so, all subjects connected with the modern up-to-date hospital should be treated with equal deference, which is not the case in this volume.

Take, for instance, the chapter, "The Hospital Pharmacy," consisting of about 3 pages! The facts stated do not apply to the modern hospital in this country, and the section dealing with drugs and their distribution could not be more inadequate. It conveys no useful information, and betrays little appreciation of the necessities of what is a considerable spending department in even an average general hospital. The chapter on the modern trained nurse is an indictment on the nursing profession, and the views of the author as to what constitutes a nurse's work and lies within her province would not be accepted by the majority of our doctors. It is difficult to believe that the ethical standard amongst, and the training of, nurses can be so different in America to what it is in this country; at any rate, some of the sweeping assertions made do not apply to the nurses in training, or the trained nurse, in this country. The chapters on administration and the attitude of the superintendent towards the Board of Management

should be carefully studied, as they will prove most helpful. While the book contains much that may be found useful, the wisdom of attempting to epitomise the whole subject of hospital construction, administration, general departments, methods, etc., into a single volume may well be open to doubt.

The Labyrinth: An Aid to the Study of Inflammations of the Internal Ear. By Alfred Braun, M.D., and Isidore Friesner, M.D.(New York). Pp. 236. With 88 Illustrations. London: Rebman, Ltd. 1913. Price 17s. 6d.

This volume is very welcome, as it is the first publication in English to give an up-to-date account of modern methods of examining and operating on the labyrinth. As the authors admit, there is still a lot of work to be done, and the present volume does not pretend to be a complete summary even of the present literature of the subject. Throughout the book the illustrations, most of which are original, maintain a high level, though some of them are rather too diagrammatic, and might well have been replaced by photomicrographs. The first section is devoted to the anatomy of the inner ear, and includes a good account of the central course of the cochlear and vestibular fibres of the eighth nerve. The authors have rightly preserved the older names of the semicircular canals—external, superior, and posterior; the more modern (German) names are inaccurate, as the canals do not lie in the horizontal, coronal, or sagittal planes. Chapter II. deals with the physiology of the labyrinth. The authors incline to the view that the utricle and saccule have probably to do with the perception of passive movement in straight lines forwards, sideways, or downwards, so that along with the semicircular canals, which inform us of passive rotation, they aid the eyes and the muscular sense in maintaining equilibrium. The writers do not claim to have made any original discoveries, but they give a good account of the work done by Flourens, Mach, Breuer, Wittmaack, Bárány, Brünings, and other investigators. Chapter III. deals with the functional examination of the vestibular apparatus, and contains a clear account of the semicircular canal apparatus. The authors are evidently acquainted with the work of Professor Crum Brown, but unfortunately they do not mention his name. Throughout this section the diagrams are simple but excellent. The examination of the cochlear apparatus is dismissed in less than four pages, as the book is mainly concerned with the question of labyrinthitis. In Chapter IV. the pathology of labyrinthine inflammation is well discussed, while Chapter V., which is mainly taken from the work of Ruttin and

Neumann, describes the symptoms of inner ear suppuration in its various stages. The last section of the book gives us the operative treatment of labyrinthitis, and is again mainly concerned with the work of the Vienna school. The operations of Hinsberg, Richards, Jansen, and Neumann are fully described. The volume, which is completed by a bibliography (arranged alphabetically) and an index, is one which should be in the possession of all British otologists.

A Text-Book of Surgery for Dental Students. By G. Percival Mills, M.B., B.Sc., F.R.C.S., and Humphrey Humphreys, M.B., Ch.B., B.D.S., L.D.S. Pp. 340. London: Edward Arnold. 1913. Price 12s. 6d. net.

Several works on dental surgery have appeared within recent years of varying merit. In some the mistake of attempting to cater for the general medical student as well as for the candidate for a dental diploma has been made; again, in others, far too little space has been devoted to the discussion of general surgical principles, and too much attention has been paid to the surgical affections of regions that have little, if any, bearing on the practice of dentistry.

In the volume before us no such error has been committed. It is a text-book for the dental student and for the dental student alone. No less than 190 pages are devoted to general surgery, and the remaining 150, except for the index and an extremely short chapter on the eye, deal entirely with the head and neck. The print is excellent, and the information both accurate and up to date. Some of the diagrams might be improved in the next edition with advantage, and mention might also be made of the removal of foreign bodies in the trachea or bronchi by forceps *without* tracheotomy. On the whole, however, we consider this text-book the best on the subject that has appeared, and can strongly recommend it both to students and to practitioners of dental surgery.

Fibroids of the Uterus: their Pathology, Diagnosis, and Treatment. By Sir John Bland Sutton, F.R.C.S. Pp 240. With Illustrations. London: Science Reviews, Ltd. 1913. Price 4s. 6d.

From the pen of one who has such a large experience, this work must be considered the "last word on fibroids." The subject is treated with great fulness from every aspect, yet in that succinct, crisp manner so characteristic of the author, so that it stands out in pleasant relief from the huge tomes which have lately been so numerous. To mention chapters of special interest and merit in a work which is

throughout so thoroughly sound and practical seems invidious. The subject of the complication of infection of the uterus is a strong feature, though perhaps overdrawn, when it is considered as the principal cause of hæmorrhage. It is evident the author does not practise obstetrics, since he states that the period of gestation is 36 weeks.

Home Health and Domestic Hygiene. By Sir JOHN COLLIE, Kt., M.D., C.M., and C. F. WIGHTMAN, F.R.C.S. Pp. 189. London: George Gill & Sons, Ltd. Price 9d. net.

THIS admirable little book is likely to prove useful to a very large number of people. It is written for the benefit of lecturers and students attending home health and hygiene classes, but it contains information which should be available in every household, and it contains it in an accessible form and in simple language.

The price of the book places it within the reach of almost anyone, and in spite of its being so cheap it is well printed, and we have not been able to find any mistakes in it.

NEW EDITIONS.

Diseases of the Heart and Aorta. By A. D. HIRSCHFELDER. Second Edition. Pp. 738. Philadelphia and London: J. B. Lippincott Co. 1913. Price 25s. net.

DURING the three years that have elapsed since the first edition of this work was published it has gained general recognition as the most exhaustive and up-to-date of all modern treatises on cardio-vascular disease. In size the second edition exceeds the first by about 100 pages, which is not to be wondered at, considering the extensive advances that have been made in the physiology, pathology, and pharmacology of the heart. The introduction of the electrocardiograph has elucidated many intricate problems, the action of the cardiac nerves has been investigated anew, the nature of certain forms of cardiac irregularity has been defined, and the sounds of the heart have been recorded graphically.

In the new edition, which we cordially commend, all these matters are discussed in a lucid and judicial fashion. The chapters dealing with the action of drugs on the heart and the pathology of arteriosclerosis have been largely re-written, while that on X-ray examination has been extended. The sources of error in interpreting high

sphygmomanometer readings as evidence of high blood-pressure are set forth, and reference is made to the numerous observations which furnish support to Russell's contention that within certain limits the sphygmomanometer may record "not blood-pressure but arterial resistance."

There are many new illustrations; the old ones have gained brilliancy and detail by the use of a better quality of paper.

A Manual of School Hygiene. By EDWARD W. HOPE, M.D., D.Sc.; EDGAR A. BROWNE, F.R.C.S.; and C. S. SHERRINGTON, M.D., F.R.S. New Edition. Pp. xii. + 311. Cambridge University Press. 1913. Price 4s. 6d.

THIS volume is a new edition of a work which was published twelve years ago. It is written for the guidance of teachers in day schools, and covers a good deal of ground—a consideration of school buildings, food and clothing, sickness, medical inspection, etc., occupying the first half of the book, and considerations affecting the child, the care of his body, and the medical aspect of his education in general, besides some chapters on physiology, occupying the remainder. The most important addition to the book as it originally appeared is the section on physiology, which is written by Professor Sherrington of Liverpool, and is excellent. There is also some new matter in the first part, chiefly excerpts or abstracts from the Local Government Board and the Board of Education publications.

It is perhaps unfortunate that some parts of the book have not been re-written, for example the chapter on "The Personal Aspect of Infection," where a sketchy account is given of one or two infectious diseases, apparently in order to aid the day-school master in recognising them with a view to isolating the sufferers. One feels that if the schoolmaster had to wait in a case of diphtheria until "after a day or so whitish patches may be seen" on the throat, the disease would have spread a good long way, and the life of the particular child affected might be in great jeopardy. It is stated also in another chapter that exclusion from school should not be limited to minimum periods, "but continued for 14 days after disinfection has been completely carried out by a competent authority, or until, of course, the child is strong enough to resume school work." The latter part of this statement may be taken for granted, but it is surely excess of caution to insist upon the former condition, especially when the "average duration of infection from commencement of illness" is stated, as it is in the table which follows, to be, in the case of chicken-pox, 9 weeks. There is nothing said about the bacteriological examination of cases of

diphtheria, either in diagnosis or in discovering carriers of the disease, and it is surely wrong at this time of day to state the average duration of infection of this disease as 3 weeks, without any covering statement as to the necessity of obtaining bacteriological evidence before re-admitting a child to school who has suffered from it. It is not in accordance with accepted opinion to state that the "average incubation period" of Rötheln is 8 days, and that of measles 12 days. To "exclude from school all children with the characteristic whoop" in an epidemic of whooping-cough is to shut the stable door after the horse has escaped.

The necessity for care of the teeth is mentioned several times but a little more might be said about the reasons why care should be taken of children's teeth, in order to provide the master with arguments to use in dealing with parents who refuse to take proper care in supervising this matter, and there might also be more explicit instructions as to means of preserving the teeth. The book would have been more useful if the part written twelve years ago had been revised before being published again.

BOOKS RECEIVED.

BEARD, C. Ophthalmic Semiology and Diagnosis . . . . . (*Rebman, Ltd.*) 21s.
BIEDL, A. Innere Sekretion, Vol. II. Second Edition . (*Urban & Schwarzenberg, Berlin*) Mk. 26.
BING, R. Regional Diagnosis in Affections of the Brain and Spinal Cord . (*Rebman, Ltd.*) 10s. 6d.
BINNIE, J. F. Manual of Operative Surgery. Sixth Edition . . . (*H. K. Lewis*) 30s.
BOURNE, A. W. Synopsis of Midwifery . . . . . (*Wright & Sons*) —
BRUCE, O. Lectures on Tuberculosis to Nurses . . . . . (*H. K. Lewis*) 2s. 6d.
BRUCE, W. Sciatica . . . . . (*Baillière, Tindall & Cox*) 5s.
DA COSTA, B. F. B. Sleeping Sickness in the Island of Principe (*Baillière, Tindall & Cox*) 2s. 6d.
EDGAR, J. C. The Practice of Obstetrics. Fourth Edition . (*Frowde, Hodder & Stoughton*) 30s.
FAUGHT, F. A. Blood Pressure from the Clinical Standpoint . (*W. B. Saunders Co.*) dol. 3.
FRIEDENWALD, J., and J. RUHRAH. Diet in Health and Disease . (*W. B. Saunders Co.*) 18s.
FRITSCH, H. 1870-71 Erinnerungen und Betrachtungen . (*Marcus u. Weber's Verlag*) —
GRAHAM-SMITH, G. S. Flies in Relation to Disease. Non-Bloodsucking Flies (*Cambridge University Press*) 10s. 6d.
GREEFF, R. Guide to the Microscopic Examination of the Eye (*The Ophthalmoscope Press*) 7s. 6d.
LOCKWOOD, G. R. Diseases of the Stomach . . . . . (*H. K. Lewis*) 25s.
LOHMANN, W. Disturbances of the Visual Functions . . . (*Bale, Sons & Danielsson*) 15s.
LUGARO, E. Modern Problems in Psychiatry . . . (*Manchester University Press*) 7s. 6d.
MACKENZIE, J. Diseases of the Heart. Third Edition . . (*Frowde, Hodder & Stoughton*) 25s.
MERCK'S Annual Report, 1912, Vol. XXVI. . . . . (*E. Merck, Darmstadt*) 1s. 6d.
MOORE, N. The Physician in English History . . . (*Cambridge University Press*) 2s. 6d.
OSTON, M. Born in Blinkers . . . . . (*Murray & Evenden*) 6s.
PARKES, L. C., and H. R. KENWOOD. Hygiene and Public Health. Fifth Edition (*H. K. Lewis*) 12s. 6d.
PEGLER, L. H. Map Scheme of the Sensory Distribution of the Fifth Nerve (Trigeminus) with its Ganglia and Connections . . . . . (*Baillière, Tindall & Cox*) 21s.
THE Bacteriology of Diphtheria. By various Authors. Edited by G. H. F. Nuttall and G. S. Graham-Smith . . . . . (*Cambridge University Press*) 15s.
THE Surgical Clinics of Dr. J. B. Murphy, Vol. II., Nos. 3 and 4 . (*W. B. Saunders Co.*) —
TROTTER, L. B. C. Embolism and Thrombosis of the Mesenteric Vessels (*Cambridge University Press*) 8s.
WALKER, J. Organic Chemistry . . . . . (*Gurney & Jackson*) 6s.
YEO, I. B. A Manual of Medical Treatment, Vols. I. and II. Fifth Edition (*Cassell & Co.*) 25s.

EDINBURGH MEDICAL JOURNAL.

EDITORIAL NOTES.

Clinical Methods.

THE first task of the apprentice is to learn how to use his tools. This is as true of clinical medicine as of any other craft, and although the two years of his apprenticeship cannot turn the student into an accomplished physician, they ought at least to send him out with a thorough mastery of method. Possessed of this he requires only experience to excel in his profession: without it he is very likely to fall a victim to rule of thumb. For this reason the teaching of methods lies at the basis of the teaching of medicine.

Broadly speaking, clinical methods, the tools of the physician, fall into three groups: First, methods of physical examination, which consist in the observation and manual examination of patients and the use of the stethoscope: second, the laboratory tests generically known as sideroom work: third, the smaller group which include exploratory puncture and the like. The student, therefore, has a great deal to learn.

It is obvious that physical diagnosis has the first claim. Until the elements of percussion and auscultation are thoroughly mastered no progress is possible. This will probably demand, from an average student, at least six months of steady work. To learn physical signs is neither easy nor can it be said to be very interesting. To some it almost amounts to drudgery. Sideroom work, on the other hand, is more varied and attractive; it is easier to teach, has more definiteness and apparent precision, and offers a certain field for neatness and skill in manipulation. There is not time in one session for both, and if both are attempted the study of physical signs is apt to suffer. A further ground for delaying sideroom work is that the evaluation of laboratory tests in diagnosis requires more knowledge of medicine than the interpretation of physical signs. There is, therefore, good reason for urging that the student should devote his first six months mainly to case taking

and physical signs, with only such sideroom work as is required to complete the cases for which he is actually responsible. At the end of that time he will be in a better position to profit by a thorough course of laboratory work, which might well extend over his next three months.

Sideroom work is applied physiology, physics, bacteriology, and pathology, and by utilising the resources of all these departments it would be possible to provide a much better course of instruction than anything which now exists. Take, for example, urine testing. At present this is taught to the second year student in connection with physiology. There he learns the ordinary tests, qualitative, and quantitative, how to estimate nitrogen distribution in the urine, and so on. This is excellent, and it is not too much to ask of a graduate nowadays that he shall have at least such practical knowledge as will enable him to read a metabolism table intelligently, even if in after life he never does another Kjeldahl. It is, however, taught too early in the curriculum, and when the student arrives at the stage at which he can utilise his knowledge, all the ground has to be gone over again. In the same way take bacteriology. The ordinary man's bacteriological knowledge need scarcely surpass what is directly applicable to diagnosis. The greater part of the bacteriological course will in all probability be no more and no less than what a well-educated student ought to be able to apply in the ward sideroom. Next come blood examinations —histology, serology, and again bacteriology. Last we have the physics of the circulation, and the instrumental examination of the heart and vessels, and the chemical investigation of the digestive system, all of which have to a large extent been developed by pure clinicians.

At a time when clinical teaching is being reorganised the feasibility of planning a complete course of sideroom work in which the various special departments concerned could combine both in providing instructors and apparatus deserves to be considered. From the student's point of view a combine of this sort would have the advantage of showing the scientific subjects he studies in a more direct relation to clinical medicine than at present, and also of saving overlapping in an already crowded curriculum. The teachers would benefit by the co-operation which such a course would necessitate—co-operation which would be fruitful in suggesting lines of research. Moreover, the cost of duplicating equipment would be avoided and the money set free for other uses On the other hand it would seem to involve an inclusion in the final examination of more sideroom work than at present, so as to ensure that the student's knowledge of subjects transferred from the earlier to the final years was adequately tested.

An Eastern Lourdes.

THE East is the home of miracle-working shrines, about many of which we have more or less authentic records. One recently studied by Dr. Libert* has certain features of medical and historical interest. The church of Phaneroménè, in the north of Asia Minor, stands on the peninsula of Cytisus, near the Sea of Marmora. That neuroses are healed there is adequately proved; the cures are popularly ascribed to miracle. The miracle-working object is an icon—a tenth-century painting of the Virgin and Child, which was transported from the church of Megalou Agrou when the latter was destroyed at the time of the Moslem conquest of Constantinople. In the healing rite the patient sits with his legs stretched out and holds the picture in front of him, to the chant of prayers and gospels and the sprinkling of holy water. Soon the icon begins to move—up and down, from side to side—dragging the patient's arms in its course: as the movements increase it strikes against his head. Suddenly, oscillating widely all the time, it swings in the air, passes behind his back, and finally returns whence it started. After this the sick man stretches on the ground, sits up clasping the icon against his body, and contorts himself wildly. Finally he rushes forward until he falls from exhaustion or is brought up by some obstacle. Only when the picture is removed from his clenched hands does he regain consciousness. The different phases of the ritual are fairly constant in neuropaths and hysterics: as for the insane, some perform the typical movements, others not: normal persons never, and sufferers from organic disease seldom, react.

Dr. Makri, of Constantinople, who has studied the phenomena, gives a rational explanation. The cult of the Panagia of Phaneroménè is peculiar to the Greeks. They believe that the Virgin is incarnate in the icon, and that she manifests her divine presence by the movements just described. The pilgrim goes expecting a manifestation and fully cognisant of what that manifestation ought to be. When he seizes the picture the expected movements are produced by involuntary muscular action, as in the familiar phenomena of table-turning, thought-reading, or planchette. (In passing, the analogy to the first named may be noted: the movement of an inanimate object being ascribed to "spiritual" influence in both cases.) As the movements become more violent, the subject passes into a kind of trance, and when the rite is ended his memory of what has gone by is a blank. That cases of functional disease are cured by a visit to the church of the Panagia Phaneroménè is noted by Miss Mary Hamilton in her study of *Incubation in Pagan Temples and Christian Churches*.† While Makri's *rationale* of the cure is adequate, it leaves unexplained the nature of the phenomenon, and it is worth while speculating as to its origin.

* *Informateur des Alienistes et Neurologistes*, November 1913.

† London, 1906.

Although Libert does not trace the cult beyond the Middle Ages, some of the attendant circumstances suggest, what is *à priori* probable, that it is in reality very much earlier than this. The church is built on the site of an ancient temple of Cybele, the mother of the gods Zeus, Poseidon, and Hades. The statue of Cybele was removed to Constantinople by Constantine, who altered the arms of the goddess to an attitude of prayer. The church from which the sacred picture derived was originally a temple of Poseidon. According to the myth of the Golden Fleece, Jason and the Argonauts landed at Cytisus during their quest, and local tradition runs that the temple of Cybele was built by them. The district was known to the ancients as Dindymene, another name for Cybele. Among the Argonauts journeyed Asklepeios, as physician, and Castor and Pollux. The cult of Asklepeios — faith-healing at temples — extended widely throughout the Mediterranean basin up to at least the second century A.D., Epidaurus being the best known shrine. The cult of Castor and Pollux included faith-healing, although in a lesser degree. Thus the temple of Cybele is traditionally connected with deities at whose shrines miraculous healing took place. To the half-Christianised barbarians of the early world the resemblance between Cybele, the mother of the old gods, and the Virgin, mother of the newly-arisen Saviour of mankind, must have been striking, and the conjecture may be hazarded that the rites practised a thousand years ago before a painting of the Virgin brought from the site of a temple of Poseidon, son of Cybele, were the same as those which had been practised before the statue of the goddess herself, in a temple associated with the Æsculapian tradition of the Argonauts.

The late Dr. John Linton.

THE death of Dr. John Linton has removed from the roll of the Royal College of Physicians the name of one of its oldest and most respected Fellows. Dr. Linton was educated in one of Edinburgh's most famous schools—George Heriot's Hospital—and to the end of his life he took a keen interest in everything connected with his old school. He graduated M.D. of Edinburgh University in 1861, and immediately thereafter laid the foundation of what ultimately developed into one of the most extensive practices in Edinburgh. In his early days he was associated with Matthews Duncan, as his assistant, and this circumstance directed his attention towards the study and practice of obstetrics, and it was in this department of medical practice that his energies were chiefly expended. He also acted for a considerable period as physician to the Royal Hospital for Sick Children.

Dr. Linton was essentially a practitioner of the old school; he was

not only the family doctor, but in a very real and practical manner the friend and adviser of the family in all its concerns. In the service of his patients he was unremitting, and although he was never in a hurry, he was able to overtake an amount of work which astonished his more bustling colleagues. The writer has often heard him recall with pride the fact that he had presided at the birth of 10,000 of the citizens of Edinburgh. In one year he attended no fewer than 460 confinements.

Such strenuous work left little time for relaxation, and of holidays Dr. Linton took but few. At last the strain began to tell, even on his robust frame, and he withdrew from practice and retired to Kinghorn, where he spent the last eight years of his life in the peaceful enjoyment of a quiet country life.

Appointments.

Dr. J. W. Simpson has been appointed a Physician to the Royal Hospital for Sick Children, Edinburgh, *vice* Dr. H. G. Melville Dunlop, retired: and Dr. Norman S. Carmichael has been appointed Extra-physician to the Hospital.

Highlands and Islands Medical Service.

The King has been pleased, on the recommendation of the Secretary for Scotland, to approve the appointment of Norman Purvis Walker, Esq., M.D., Treasurer of the Royal College of Physicians of Edinburgh, to be an additional member of the Highlands and Islands (Medical Service) Board, constituted under the Highlands and Islands (Medical Service) Grant Act, 1913.

British Medical Benevolent Fund.

We have been requested to draw the attention of our readers to the claims of the British Medical Benevolent Fund, the objects of which are (1) to make grants of money to distressed members of the medical profession, their widows or orphans; and (2) to provide annuities for such after they have reached the age of 60 years. Annual subscriptions are now due, and as funds are urgently needed to enable the institution to carry on its excellent work, an appeal is made for new subscribers. The local Treasurer is Dr. A. Dingwall Fordyce, 8 Manor Place, Edinburgh.

Royal College of Physicians of Edinburgh, Royal College of Surgeons of Edinburgh, and Royal Faculty of Physicians and Surgeons of Glasgow.—At the quarterly examinations of the above Board, held in Edinburgh in October, the following passed :—*First Examination.*—Joseph Michaelson, A. A. Lamaletie, V. Mahaderan, Clifford Pullan, William Jackson, J. H. Brown, Alex. Morrison, and S. Penniah. *Second Examination.*—H. G. Anderson, James S. Durward, C. J. Middleton, J. H. Bain, H. Ellison, O. C. Evans, and V. A. Rankin. *Third Examination.*—C. F. Pereira, J. V. Duffy, A. C. M'Kee, William MacLeod, A. G. Bee, W. H. Wray, T. W. Drummond, J. K. Garner, and R. C. W. Spence. *Final Examination.*—The following were admitted L.R.C.P.E., L.R.C.S.E., L.R.F.P.&S.G. :—Joseph Burnett Wilman, Leeds; John Blacker Aickin, Belfast; Charles Stuart Ogilvy, Cumbernauld; William Bannatyne, Paisley; Emma Christiana Rolfe Fisher, London : Solomon David Bridge, Glasgow; Bickford Jenkin Hattam, Edinburgh; Winnifrid Mary Doran, Lurgan, Co. Down; Michael Patrick Power, Co. Cork : John Wilson M'Cagle, Edinburgh; Venkatasubba Mahadevan, Ernakulam; Charles Dolan, Co. Leitrim; Harold Emerson Rose, Bristol; Robert Howie Thomson, Airdrie; Robert Eric Noel Martyn-Clark, Edinburgh : John Nichol Clark, Sheffield; Michael Vincent Walsh, Cork; and John Richard Smith, Carlisle.

THREE CASES OF DYSPITUITARISM.

By A. W. FALCONER, M.D., M.R.C.P.(Lond.).

It is now some twenty years since certain forms of gigantism and acromegaly were first attributed to alterations in the functions of the pituitary body, but it is only recently that we have begun to realise the numerous clinical types which may originate from pathological changes in this gland. The pituitary gland is developed from two sources—the anterior lobe from a diverticulum from the buccal cavity, and the posterior lobe from a downward growth of the second cerebral vesicle. Each lobe is probably endowed with several functions, and much of the recent advance of our knowledge of the results of pituitary disease is due to the recognition of the fact that the pituitary is a secreting gland subject to functional overactivity or underactivity just as are several of the other ductless glands, notably the thyroid.

The difficulty in the recognition and interpretation of these cases has been due partly to the complexity of the functions of the different portions of the gland and the close inter-relationship with several of the other ductless glands, and partly to the impossibility of artificially producing conditions of hyperactivity of the gland. Hence our conceptions of the effects of hyperpituitarism must depend on clinical and pathological data and on deductions drawn from results of spontaneous or artificially produced hypopituitarism. Diminished activity of the gland can readily be produced by ablation experiments both in young and adult animals, and faithfully reproduces both the skeletal and metabolic changes naturally met with in certain types of disease. The clinical appearances are, however, still further complicated by the fact that just as hyperthyroidism may terminate in hypothyroidism, so hyperpituitarism may end in hypopituitarism; and as certain of the skeletal changes of hyperpituitarism are necessarily permanent, cases may simultaneously present the effects of both hyper- and hypoactivity. Further, it is possible, at least theoretically, that the various functions of the different lobes may not be equally affected, or that the functions of one lobe may be in a state of overactivity while the functions of the other are diminished.

Thus there is still much that is obscure both in the various functions of the different portions of the gland and in their close inter-relationship with several of the other ductless glands. As the result, however, of much patient investigation, clinical, patho-

logical, and experimental, by many investigators, but pre-eminently by Cushing, we are able to state with some confidence that the anterior lobe of the pituitary gland has a profound influence on the growth of the skeleton. When the secretion of this portion of the gland is present in excess, we get the development of certain forms of gigantism and acromegaly; when deficient in amount, the production of certain types of dwarfism. The posterior lobe, on the other hand, has a marked influence on carbohydrate metabolism; when deficient in amount, the tolerance for sugars is markedly increased, but the absorbed sugar is incompletely broken down and is stored as fat, leading to the development of a characteristic adiposity.

The pituitary gland has, further, a close relationship with the development of the sexual glands, whether by means of the anterior or posterior lobe secretion is not yet quite clear. Most recent authorities, however, attribute the defective sexual development met with in pituitary disease to anterior lobe defect. Posterior lobe extracts have also a marked diuretic action, and polyuria is a prominent symptom in not a few cases of gross pituitary disease, although here also we are still uncertain as to the exact mechanism of its production.

The following three cases illustrate different types of pituitary disease:—

Case I.—M. M., female, æt. 16½. Referred on 28th March 1913 by Dr. Souter from the ophthalmological department of the Aberdeen Royal Infirmary to Professor Mackintosh's out-patients, with the report that she presented left homonymous hemianopia with double optic atrophy.

Previous History.—Patient had always been small, but apart from measles and whooping-cough in infancy had considered herself healthy until the end of 1912. She then began to lose flesh and was troubled with inordinate thirst, and passed large amounts of water. She consulted Dr. James Smart, who informed her that she was suffering from diabetes insipidus. Dr Smart is unable to give me exact figures as to the quantity of urine passed, but there is no doubt that she was passing large amounts of urine of a very low specific gravity and without sugar. She was in bed for six weeks, when the polyuria gradually subsided and she returned to work. She then began to notice that her sight was defective, and she occasionally suffered from headaches. She at no time had any fits. She was admitted to Professor Mackintosh's ward for observation.

Family History.—Father and mother alive. The mother suffered from a bad sore throat shortly after the birth of patient and now

Fig. 1. Case I.

Fig. 3. Case I. Sella Turcica.
Diameter on plate 6 mm.

Fig. 4.—Case II.

Fig. 6. Case II. Sella Turcica.

Fig. 5.—Case II. Skiagram of Finger.

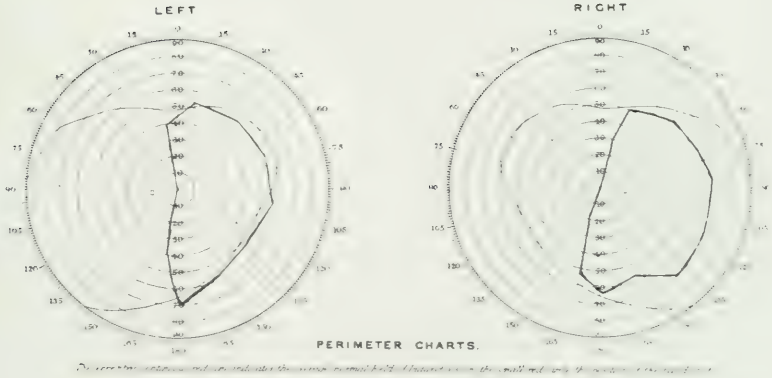

Fig. 2.—Case I. Visual Fields for White.

presents a healed perforation of the soft palate the size of a sixpence. Patient has two brothers, both healthy and of normal stature.

State on Admission.—Height, 53 inches; weight, 3 stone 4 lb. (Fig. 1). Patient was markedly undeveloped and emaciated. There was a complete absence of the secondary sexual characteristics. The skin was not unusually dry or scaly. There was no abnormal pigmentation. The hair on the head was profuse, but there was no trace of hair on the body, axillæ, or pubes. The hands and feet were small and the fingers tapering. There was no mandibular or maxillary prognathism, and the teeth were normal. Examination of the cranial nerves showed double simple optic atrophy, left homonymous hemianopia with some contraction of the right temporal field (Fig. 2), almost complete paralysis of the left external rectus, and slight weakness of the right lower face. Mentally the patient was quite bright, but extremely timid and nervous, hence examination was somewhat difficult. Otherwise the examination of the nervous system revealed nothing abnormal. The pituitary fossa (Fig. 3) was perched on a solid sphenoidal base and was extremely small. The heart and blood-vessels showed nothing abnormal. The systolic blood-pressure varied from 80 to 88 mm. mercury (Riva-Rocci). The lungs and abdominal viscera showed nothing abnormal. The urine varied in amount from 30 to 50 ounces per day, and was free from sugar and albumen. The external genitalia were completely infantile. The carbohydrate tolerance was markedly reduced: 25 grms. of glucose uniformly produced glycosuria. The temperature while the patient was in the ward was always below 98° F. The Wassermann reaction was strongly positive.

Leaving the hospital, the patient was given a week's supply of Burroughs Wellcome's tabloids of the whole pituitary gland, but was not seen again for over two months. During this period her symptoms markedly increased. She suffered from severe headaches and frequent vomiting. On returning to hospital she was again given pituitary tablets. The headaches and vomiting at once ceased, and her mother stated that she was a different person. The fields of vision remained as before, but the weakness of the left external rectus had become much less.

Here we have a case whose chief features are dwarfism, sexual infantilism, emaciation, marked diminution of the carbohydrate tolerance, an abnormally small sella turcica, and a history of polyuria accompanied by unmistakable signs of pressure in the interpeduncular space occurring in a patient the subject of congenital syphilis.

The dwarfism may be confidently attributed to a functional deficiency of the anterior lobe. Cushing and others have shown that the experimental destruction of a portion of the pituitary in

puppies leads to dwarfing, sexual infantilism and adiposity, and there are now numerous clinical examples of dwarfism, sexual infantilism, and adiposity both in children and adults which have been shown to be associated with destructive lesions of the pituitary gland such as teratoma,[1 2] fibroma,[3] tuberculosis,[4] and epitheliomatous cysts.[5 6 7] In the present case, however, in place of adiposity with increased carbohydrate tolerance, we have a marked emaciation with polyuria and a striking diminution in the carbohydrate tolerance. This suggests the possibility that, associated with the anterior lobe defect, is an overactivity of the posterior lobe.

Cushing[8] reports an almost exactly similar case (Case IV.) in a girl of 18, who presented, in addition to local signs of pituitary disease, dwarfing, sexual infantilism, and polyuria. He was unable to estimate the carbohydrate tolerance in this case on account of vomiting. He also refers to similar cases reported by Levi and Lemann and Van Wart, in which also there is no note of the carbohydrate tolerance.

Cushing in commenting on these cases refers to the striking contrast they present to the usual adiposo-genital distrophy of Fröhlich, but states that probably all cases of hypophyseal infantilism will eventually be grouped together whether they exhibit adiposity or not. He considers that in his own case there was certainly an early functional deficiency of the pars anterior which resulted in the persisting sexual and corporeal infantilism, and states that it is "barely possible that there may not have been a comparable degree of posterior lobe implication." Should, however, further observation show that these cases are invariably accompanied, as in my case, by a diminution in the carbohydrate tolerance, this suggestion would become much stronger.

The significance of polyuria, which theoretically at any rate would also indicate an overactivity of the posterior lobe, is much reduced by the fact that polyuria not infrequently occurs in cases which otherwise present all the features of posterior lobe defect.

On clinical grounds alone it is impossible to tell whether the interpeduncular tumour is primarily of hypophyseal origin or whether the hypophyseal symptoms are the result of a direct compression of a syphilitic process. That congenital syphilis may be a cause of primary hypophyseal changes is suggested by a case recorded by Brunner[9] of an adipose dwarf with sexual dystrophy and a positive Wassermann reaction, whose only local symptoms were an enlargement of the sella turcica with optic atrophy.

Case II.—Male, æt. 21, seen at the Aberdeen Royal Infirmary 1912 for pain in the joints, which rapidly disappeared under aspirin. Patient's only complaints were of his joints. He was a well-developed adipose young man (Fig. 4) with the typical feminine type of adiposity. There was marked prognathism of the lower jaw, with spaces between the teeth of both the upper and lower jaws. The nose was large and the lips thick. The hands and feet were notably large. The fingers were tapering (Fig. 5). Skiagrams of the hands and feet showed that the epiphyses were not united. There was no hair on the face, axillæ, or pubes. The penis was small, and about the size of that of a boy of 12 years of age. There was bilateral cryptorchidism. He had been married for six months and was able to have connection. Skiagrams of the head (Fig. 6) showed a sella turcica of about normal size but somewhat flattened out, and with a distinct double contour at the base. The optic discs were normal, and the fields taken by Dr. Souter showed a slight contraction on the temporal sides. I had no opportunity of estimating the carbohydrate tolerance. In all other respects the patient appeared perfectly normal.

We have here a case presenting definite acromegalic features, sexual infantilism, and a characteristic feminine type of adiposity. The acromegalic features indicate that there has been at some period a state of overaction of the anterior lobe, while the characteristic adiposity points to a deficiency of the posterior lobe. This case, therefore, is the exact converse of Case I., and it is interesting to note that in both there is sexual infantilism.

Case III.—R. M., male, æt. 18, came to the out-patient department of the Aberdeen Royal Infirmary on 21st April 1913, on account of giddiness and fainting turns, from which he had been suffering for over two months. He stated that during an attack something came over him so that he did not know where he was or what he was doing. On several occasions when an attack had come on in the street he had been led home by his companions, and he himself had known nothing about it till he came to himself at home. He had no olfactory or gustatory aura. He occasionally suffered from headache, but not severely. Patient was an over nourished individual, 5 feet 9 inches in height and 12 stone in weight. The adiposity was of the typical feminine type. The hands and feet were large and square. There was marked maxillary prognathism. The hair on the face and axillæ was scanty, and the pubic hair was of feminine distribution. The penis was small. The carbohydrate tolerance was rather high: 150 grms. of glucose produced a mere trace of sugar in the urine. Skiagrams showed that the sella turcica was slightly enlarged, being 17 mm. in diameter. The optic discs were normal, and the fields of

vision for white full. Patient was treated with tablets of the whole pituitary gland, and has had no further symptoms.

We have here a patient presenting the typical feminine type of adiposity, maxillary prognathism, and a rather high carbohydrate tolerance, associated with a slightly enlarged sella turcica and fits of the "dreamy" type, first shown by Hughlings Jackson to be associated with irritation of the uncinate lobe, and by Cushing to be extremely frequent local manifestations of pituitary enlargement. These fits at once disappeared on glandular feeding.

I am indebted to Professor Mackintosh for permission to publish Case I., to Dr. Usher for permission to publish the fields of vision, and to Dr. Levack for taking the skiagrams.

REFERENCES.—[1] Kon, *Ziegler's Beiträge z. path. Anat. u. allg. Path.*, 1908, xliv. 233. [2] Benda, *Berl. klin. Woch.*, 1900, No. 52, 1205. [3] Hutchinson, quoted by Benda. [4] Hueter, *Virchow's Archiv*, 1905, clxxxii. 219. [5] Minter and Quackenboss, *Trans. Amer. Surg. Assoc.*, 1910, xxviii. 94. [6] Nazari, *Il. Policlinico, sez. medica*, 1906, xiii. 445. [7] Bartel, *Zeitsch. f. Augenheilk.*, 1906, 497 and 530. [8] Cushing, *The Pituitary Body and its Disorders*, Philadelphia, 1912, p. 45.[9] Burnier, *Annal. of Ophth.*, 1912, xxi. 263.

A NOTE ON SCARLET FEVER IN THE AGED.

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IT is generally admitted that it is unusual to meet with scarlet fever in the aged. Personally, until the case under notice was admitted to hospital, I had never, in an experience of over 20,000 cases, seen the disease in a patient of over 70 years of age. The case, then, appears to be sufficiently rare to be worth reporting, and it may also be of interest to consider how far the experience of other observers tallies with my own on this point. It is not suggested that the figures to be given are in any way exhaustive, but taken, as they are, both from the works of earlier observers and from hospital reports of quite recent date, they at least give an adequate idea of the comparative frequency with which we may expect to meet with scarlet fever in persons of over 60 years of age.

A. C., male, aged 74 years, was admitted to the Edinburgh City Hospital on 16th June 1913 for "observation" for scarlet fever, having been previously seen by Dr. Robert Robertson and by Dr. Maxwell Williamson, the Medical Officer of Health. It was stated that he had been "out of sorts" since the 12th, that

vomiting and shivering occurred on the 14th, and that a rash was noticed on the morning of admission.

On examination the patient was found to be a not very well nourished old man, and appeared seriously ill. He suffered from chronic conjunctivitis and blepharitis. The face was much flushed—the tongue showed a heavy coating of white fur with no papillæ visible. The throat was markedly congested, but no exudation was present. The temperature was 100·5 , the pulse 96, and the respirations 24. The pulse was irregular both in time and character. The heart was enlarged to the left and upwards, and a soft blowing systolic murmur was audible at the apex and at second right costal cartilage.

The body was covered with a brilliant scarlatiniform eruption, generally distributed but a little patchy in places, and perhaps more markedly developed in the lower part of the trunk and on the shoulders than on the upper part of the chest. The limbs were also covered with the rash, which was more pronounced on the flexor surfaces. But for the age of the patient the case would have been accepted as scarlet fever without hesitation. It was, however, kept under observation, and other possible causes of the rash were carefully investigated. It was found the man had taken no drugs, had received no enema, and had not previously suffered from erythema. The only outstanding feature of his previous history was the fact that he had had rheumatic fever twice. At this stage of his illness he had no rheumatic symptoms. No direct exposure to scarlet fever could be traced, but at the time of his admission cases were being admitted to hospital from the street in which he lived.

On the 17th and 18th the appearance of the patient altered little. The intensity of the rash increased and it became definitely miliary, as so many intense scarlet eruptions do. He slept badly and required paraldehyde. His pulse remained feeble and intermittent, and his temperature ranged between 100 and 101 F. He was from the first freely stimulated with alcohol. On the 18th the tongue commenced to peel in strips down the centre, and this peeling continued on the following day. On the 19th, he was delirious and very prostrated. The temperature was lower, averaging only 99 , but he appeared desperately ill. On this day traces of albumen appeared in the urine.

On the 19th his tongue was of the characteristic denuded strawberry type, with great prominence of the papillæ. He suffered much from hiccough, which had troubled him on the

previous day. He also complained of pain in the ear, and this persisted for several days. For the next few days the temperature averaged about 100°. He still appeared to be very dangerously ill, and continued to hiccough. The original rash disappeared, but on the 22nd a blotchy septic rash appeared on chest and arms, quite of the type which is so frequently observed in septic scarlet fever. On the 25th slight arthritis of the wrists was complained of. By the 26th the temperature was normal, the patient very much better, and desquamation of a characteristic kind was visible all over the trunk and arms. On 4th July the desquamation was visible between the fingers, and on the 7th the palms commenced to peel. A little later the skin of the feet followed suit, desquamation being finally completed by 28th July. The patient was discharged well after a hospital detention of 43 days.

There seems little reason to doubt the diagnosis. Particularly characteristic were the rash, the changes in the tongue, the complications of otitis and arthritis, and the regular sequence of desquamation.

If the earlier literature on the subject is consulted it will be found that Thomas in his well-known monograph mentions a case of scarlet fever in a man of 140 years reported by Braun, and others aged 74 and 70 respectively, reported by Ballard and Lees. Murchison, to whom we naturally turn on a question of this sort, considers the disease to be "rare" after 40 years of age, and does not seem to have personally seen it in anyone older than 64 years. He has, however, left us a table of age periods in scarlet fever constructed from the death returns of England and Wales for the years 1847 and 1855-61, and from those of London for 1845-6 and 1848-54. Of 148,829 fatal cases

From 65 to 75 years of age there were			88
„ 75 to 85	„	„	30
„ 85 to 95	„	„	4
Over 95	„	„	6

Even if we assume that the fever usually would be fatal in persons much over 70, and allow for the very large number of cases which such a mortality table represents, it seems a little difficult to believe that all these were instances of genuine scarlet fever. Indeed, with our present knowledge of drug rashes, enema rashes, septic rashes, and so forth, it is justifiable to suspect that the diagnosis was not in all cases accurate. The figures of Johannessen (quoted by von Jürgensen) for Norway, 1872-78, moreover, amount to 6450 fatal cases, only 18 of which were in

persons of over 30 years of age and none in any one older than 40.

The experience of Hoff in the Färöe Islands (also quoted by von Jürgensen) appears to be more in accordance with modern fever hospital statistics. It suggests that with increasing age the tendency to contract scarlet fever greatly diminishes. While his figures are concerned only with comparatively few individuals—the population of Thorshavn—they are particularly instructive in that they refer to an unprotected community. Of 237 persons who took the fever only 3 were between the ages of 40 and 60, and only one over 60 years. If the ages of the population are considered, of those under 20 years of age, living in infected dwellings, between 63 per cent. and 75 per cent. in the 4 quinquennial periods contracted the disease, whereas 2·5 per cent. of those over 40 were attacked. Of the whole population 38 per cent. suffered, whereas, when measles invaded the same community, 99 per cent. were proved to be susceptible to that infection, a striking difference in the immunity conferred by age in the two diseases.

To come now to more modern figures which, based on the experience of the fever hospitals, have the advantage of referring to the total number of cases treated, and not to the deaths alone, as do those of Murchison and Johannessen. The most imposing are those given by Foord Caiger, who, out of 167,840 cases treated in the Metropolitan Asylums Board Hospital from 1892-1904, only reports 11 in persons of over 60 years of age. No distinction is made above that age, but it may be inferred that very few of the patients were over 70 years. Brownlee, in a study of the age periods of the different infectious diseases, reports 22,033 cases of scarlet fever, of which only 2 occurred between the ages of 60 and 70, and one over 70 years. Pearson found in 14,654 cases treated at the Leeds Fever Hospital 5 between the ages of 50 and 60, and none over 60 years. In my last 8956 cases up to the beginning of the present year, there were 4 patients of between 50 and 60 and one only over 60 years, and in the 9216 cases which preceded them there was no instance of the disease in a septuagenarian. I have also added up the numbers given in the *Metropolitan Asylums Board Reports* for the last 4 years, and find that in 42,867 consecutive cases there were only 3 of the age of 60 and upwards. A search through recent *Glasgow Hospital Reports* in my possession shows that one patient of 85 years has been treated as scarlet fever. Otherwise, out of 7636 patients, 7 were between 50 and 60 and one over 65 years. If we add these figures we arrive at a grand

total of 263,986 cases treated in modern fever hospitals, of which only 20 occurred in persons above the age of 60 years, while of these only 2 are definitely stated to be 70 years and upwards. The case reported above, therefore, has some claim to be considered a rare one.

References.—Murchison, *Lancet*, 1864, vol. i. Caiger, Clifford Allbutt's *System of Medicine*, vol. ii., part i., 1906. Brownlee, *Glasgow City Hospital (Belvedere) Report*, 1902. Pearson, *Leeds City Hospital Report*, 1911. Thomas, von Ziemssen's *Cyclopædia*, vol. ii. 1875. Von Jürgensen, Nothnagel's *Encyclopædia of Practical Medicine*, 1902. *Metropolitan Asylums Board Reports*, 1909, 1910, 1911, 1912.

THE RUMPEL-LEEDE PHENOMENON IN THE DIAGNOSIS OF SCARLET FEVER.

By GEORGE RICHARDSON, M.D.

The test for scarlet fever devised by Rumpel and Leede[1] has hitherto attracted little attention in this country. During the winter of 1912-13 I had considerable experience of its application in the wards of the Edinburgh City Hospital, and it appears to me, at least, to deserve serious consideration.

Technique.—A domette bandage is tied tightly round the arm immediately above the elbow, the correct pressure being such that the pulse is just perceptible at the wrist. The bandage remains *in situ* for from 5 to 15 minutes; and at the end of that time, if the bandage has been properly applied, the arm should be markedly cyanosed.

Should the arm become a dead mottled white the reaction will not be obtained, and in such a case the bandage must be removed, a few seconds allowed for the reactionary hyperæmia to become established, and then re-applied. In cold weather the reaction is sometimes difficult to obtain, and in every case the arm should be kept warm. Rubber bandages have been used as Rumpel and Leede suggest, but the domette variety was found to be much more satisfactory.

Appearance of Reaction.—The bandage having been removed, the skin at the fold of the elbow on the side distal to where the bandage has been is examined for the reaction. This consists in the appearance of a widely varying number of minute petechial hæmorrhages, fairly deeply seated, which do not disappear on pressure, and are, in fact, made much more evident by stretching the skin.

The typical reaction is one where the petechiæ are fairly numerous immediately distal to the bandage, but become fewer

and more scattered the further down the arm one goes, the entire area covered being rather more than that of the antecubital fossa: no reaction is seen on the extensor surface of the arm in the ordinary case.

On each side of this typical reaction, variations are found from the doubtful case where only two or three petechiæ are observed, to the intense case where the whole forearm on both flexor and extensor surfaces, and also on the dorsal surface of the hand, is covered with a profuse hæmorrhagic eruption. Bennecke[2] states that the reaction never occurs on the extensor surface of the forearm; but I find it impossible to agree with this statement, although it is true that in the ordinary case no reaction is seen in this situation.

The explanation of the phenomenon seems to be that the scarlatinal exanthem causes a certain "capillary vulnerability." One very striking peculiarity noticed was that the petechiæ only appeared in such situations as were previously occupied by the rash: and further, Rachs[3] has shown that in the rash of scarlet fever there is an exudate of a hæmorrhagic nature, apparently hæmorrhage by diapedesis, so that one is justified in concluding that the Rumpel-Leede phenomenon is caused by intensifying this diapedesis.

In investigating the various features of the phenomenon presented in scarlet fever, I first satisfied myself that the reaction was invariably present in this disease by examining a series of 210 cases of undoubted scarlet fever, with the result that in every case without exception a positive result was obtained. The earliest appearance of the reaction was coincident with the appearance of the rash on the arms; no reaction was obtained before the rash had spread to that situation. The length of time during which it is possible to obtain the reaction, taking the average of a number of observations made on 134 of the cases, was found to be 29 days, the shortest period noted being 13 days and the longest 96 days. The presence of complications, as observed in 39 of the cases, had the effect of prolonging the duration of the reaction to an average of 34 days. In other words, in an uncomplicated case of scarlet fever the reaction can be obtained up to the end of the fourth week, and, if complications are present, up to the end of the fifth week. This is rather opposed to the findings of Rumpel and Leede, who state that the reaction persists until the end of the sixth week even if there are no complications.

In infants below the age of two years there appeared to be

some difficulty in obtaining consistent results, especially in those with soft, fat arms, probably on account of the difficulty in judging the correct pressure. With this exception, neither age nor sex appeared to exercise any influence.

The intensity of the rash did not appear to exercise any very marked influence. Certainly, if the test was applied while an intense rash was present or very soon after such a rash had faded, the reaction was often extremely marked; but, apart from this, no other effect was noticed, and the duration of the reaction was not in any way affected.

The presence of intercurrent diseases—scarlet fever with diphtheria, with chicken-pox, with whooping-cough, and with mumps, occurring coincidently in various cases—did not appear to have any bearing upon the appearance of the phenomenon.

With a view of ascertaining how far the reaction was possible in cases other than scarlet fever, normal persons (13 in number), diphtheria (22 cases), whooping-cough (10 cases), chicken-pox (7 cases), influenza, pneumonia, and acute tonsillitis (1 each) were subjected to the test, and in no single case was a positive reaction obtained.

In patients, however, who had previously suffered from rashes the results were different. Rumpel and Leede have already pointed out that the reaction is sometimes obtained after measles, and my experience corroborates the statement that a reaction is obtained. When, however, it is examined carefully it will be found that the appearance presented is not exactly the same as that seen in scarlet fever, the petechiæ in measles being arranged in small groups of six to eight, corresponding accurately to the site of the macules; in only one case did the petechiæ, very few in number, occur between the macules as well.

Fifteen cases of measles were examined, and of these 7 were positive and 8 negative, but in all the negative cases the rash had faded, only slight staining being left, while out of the positive cases 6 were tested while the rash was present, and in them the reaction was negative soon after the rash had disappeared, from the sixth to the eighth day of disease; in one case only it persisted up to the twelfth day.

In rubella also a reaction was obtained, and in this disease it resembled the appearance shown in scarlet fever much more closely than that observed in measles. Eight cases were examined, four being positive and four negative, and here again in all the positive cases the rash was present at the time of applying the

test; further, all these cases were negative before the end of the first week.

In drug, serum, and enema rashes the results obtained were on a parallel with the above, some cases giving the reaction, others proving negative, but the conclusion I arrived at was that if a rash of scarlatiniform appearance, whatever its nature, was present on the body at the time of applying the test, then in all probability a positive result would be obtained, but that very soon after the rash had disappeared, at most 3 or 4 days, the result would almost invariably be negative.

That the test is one of eminently practical value and not merely of theoretical interest is shown by the following series of 48 cases of patients sent into hospital for observation for scarlet fever. These cases were all of the type so often met with in practice where the diagnosis is extremely doubtful, or where there may be nothing evident about the patient to aid one in arriving at a diagnosis at all, the first confirmatory symptom noticed being the presence of desquamation.

This series of cases falls naturally into three groups:—

(*a*) Seventeen cases in which the test was negative did not desquamate.

(*b*) Twenty-five cases in which a positive result was obtained desquamated quite typically.

(*c*) Six cases (presumably erythemata) in which the test was positive did not desquamate.

It is important to note that this series does not contain a single case which was negative to the test and subsequently desquamated.

A further practical application of the test was made evident in the diphtheria wards, for keeping before one's mind the possibility of scarlet-fever patients carrying the Klebs-Löffler bacillus in their throats and therefore being admitted as diphtheria patients on the strength of the swab taken of the throat being positive, I decided to test all patients in whom there was the least suspicion of scarlet fever. Although many of the cases were negative to the test, four patients gave a positive result and all subsequently desquamated typically. In two of the cases the swab of the throat was positive and in two it was negative, but in none of them had any suspicion been entertained by the medical attendant who first saw them, that they were suffering from scarlet fever. It is unnecessary to dilate upon the probable results of putting such unsuspected cases of scarlet fever into a diphtheria ward.

The conclusions I have arrived at in regard to this test are, on the one hand, that if no rash has been present there will be no reaction; this strongly suggests that if the test is negative the case will not be one of scarlet fever. On the other hand, if a rash of scarlatiniform nature is present on the body, there will almost invariably be a positive reaction, but, as has been shown, in the case of drug rashes, serum rashes, etc., the reaction is negative very soon after the rash has disappeared, while in measles and rubella the reaction does not persist beyond the end of the first week. On the whole, therefore, a positive reaction obtained when a scarlatiniform rash is present must be weighed up along with all the other facts of the case.

That the test is of the greatest value in the diagnosis of scarlet fever from the 4th or 6th day up to the 14th or 16th day or later can hardly be doubted, for it is during this period when the typical "red strawberry" tongue has lost its diagnostic appearance and desquamation in many cases not yet become evident, that it may be otherwise impossible to arrive at a definite diagnosis.

Again, in all doubtful cases—cases where there has been only slight constitutional disturbance, where the rash is transient, the throat a little congested and the tongue never showing the typical red strawberry appearance—it cannot be questioned but that the Rumpel-Leede phenomenon is of value as an additional diagnostic sign.

I may state that since becoming resident medical officer at East Pilton Hospital I have continued to apply the test in all doubtful cases of scarlet fever and in all suspicious cases admitted as diphtheria, and the results have been such as to strengthen my opinion that the Rumpel-Leede phenomenon is an easy, practical, and reliable test in all cases where there is any suspicion of the patient having had scarlet fever.

References.—[1] *Münch. med. Woch.*, Feb. 1911. [2] *Ibid.*, April 1911. [3] *Ziegler's Beiträge*, 1910.

A CASE OF AURICULAR FLUTTER.*

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The number of published cases presenting electro-cardiographic evidence of auricular flutter is still so small that the following case seems worthy of being recorded.

A. T., customs officer, aged 52, was admitted on 6th September 1913 to the wards in the Royal Infirmary, Edinburgh, under the

* From the Clinical Medicine Research Laboratory of the Royal Infirmary.

charge of Dr. Gulland, to whose kindness I am indebted for permission to record the case. The patient complained of breathlessness and of pain in the region of the stomach. He has acted as customs officer for eleven years, and describes the work as light. Prior to this he served for 23 years in the Army, both at home and abroad. He has always enjoyed good health, and the only occasion on which he has been confined to bed was at Malta in 1886, when he suffered from rheumatic fever. He had no rheumatic symptoms in childhood. He denies having had any form of venereal disease. He drinks beer and whisky but never, he says, to excess. He does not smoke.

For eight months he has suffered from pain in the region of the stomach, associated with flatulent distension. Two months ago he first noticed slight breathlessness on exertion. The dyspnœa became gradually more pronounced, and has latterly been constantly present, even when he is at rest in bed. It has interfered considerably with sleep. A month ago his left foot was swollen for a few days, but there has been no œdema of the feet or legs at any other time. He has frequently suffered from palpitation and giddiness on rising in the morning, but has never fainted. There has been no pain at any time in the chest or arms. In spite of his symptoms the patient was at work up to the time of his admission to hospital.

On admission the patient was very breathless. The pulse-rate was 156-164 per minute, rhythmic, the pulse-wave small. The systolic blood-pressure in the brachial artery was 82 mm. Hg. The heart was dilated, with diffuse pulsation extending 4½ inches from the middle line in the 5th left intercostal space. The heart sounds were unaccompanied by any murmur. The second sound was reduplicated at the base of the heart. There were no morbid accompaniments to the breath sounds. The lung bases were free from œdema. The urine was scanty, had a specific gravity of 1025, and was free from albumin.

On 7th September tincture of digitalis was given in doses of 10 minims thrice daily, and was continued in the same amount till 16th September, when its administration was stopped.

The following is a record of the pulse-rate at the wrist during this period:—

	Rate per Minute.	Rhythm.
September 6th-8th	156-164	Regular.
„ 9th-11th	130-134	Slightly irregular.
„ 12th	100-120	„ „
„ 13th-14th	100-104	Regular.
„ 15th-16th	64-76	Totally irregular.

The first electro-cardiographic records were obtained on 12th September. They showed that the auricles were contracting rhythmically at a rate of 298 per minute, while the ventricular action was rather irregular, with a rate of about 120 per minute. This irregularity was due to the varying response of the ventricles to auricular contraction, for there was a mixture of 2 to 1 and 3 to 1 rhythms (Fig. 1).

On 13th September another record was obtained (Fig. 2). The auricles were now beating rhythmically at a rate of 312 per minute, the ventricles, also rhythmically, at a rate of 104 per minute, a 3 to 1 rhythm. On 16th September, when the pulse had dropped in rate to about 70 per minute, and was totally irregular, an electro-cardiogram (Fig. 3) showed that the rapid co-ordinate contraction of the auricles had been replaced by fibrillation, and that extra-systoles were occurring.

Unfortunately no graphic records were obtained while the ventricular rate was at its maximum (156-164), but in the light of subsequent events it seems almost certain that at this stage a 2 to 1 rhythm existed, an auricular rate of about 312 per minute being already established.

Digitalis had the effect, usually seen in these cases, of reducing the ventricular rate and so producing first a mingling of a 3 to 1 rhythm with a 2 to 1, and next a pure 3 to 1 rhythm. It is possible that a 4 to 1 rhythm may have been induced before fibrillation set in, but this effect was not observed. With the progressive slowing of the ventricular contractions the dyspnœa became less marked, and was entirely absent while the patient was at rest. He slept more soundly and felt better in every way.

From 16th September to 12th October the pulse remained totally irregular, and records obtained at intervals showed that the auricles were still fibrillating. The pulse-rate varied from about 60 to 80 per minute. During this period no digitalis was given.

The patient latterly got up daily, and was able to walk a short way without inconvenience.

On 12th October he rose as usual, but had soon to return to bed, as he felt giddy and faint. The pulse-rate was found to have risen to 152 per minute, and the beat was rhythmic.

Administration of tincture of digitalis was resumed next day (13th October), 10 minims being given thrice daily, as before.

The dose was increased on 20th October to 15 minims thrice daily, and reduced again to the former amount on 23rd October.

The following table shows the effect on the pulse-rate at the wrist :—

	Rate per Minute.	Rhythm.
October 12th-14th	152-156	Regular.
„ 15th-17th	130-140	Slightly irregular.
„ 18th-20th	110-130	„ „
„ 21st	80-90	Totally irregular.
„ 22nd-31st	60-84	„ „

Electro-cardiograms obtained on 12th and 14th October showed the existence of auricular flutter with a 2 to 1 rhythm (Fig. 4).

On 16th October there was a mixture of 2 to 1 and 3 to 1 rhythms (Fig. 5). This had given place on 19th October to a mixture of 4 to 1 and 2 to 1 rhythms (Fig. 6). The auricular rate in these records varied from 298 to 312 per minute.*

On 21st October auricular fibrillation had again appeared (Fig. 7), and has persisted up to the present time (31st October).

As before, the patient's condition improved as the ventricular rate became slower. He was allowed to get up on 23rd October, two days after the onset of fibrillation, and he is at present walking about a little daily without discomfort.

Summary.—A case presenting symptoms of cardiac insufficiency with a greatly increased ventricular rate was shown by electro-cardiographic records to be an example of the condition known as auricular flutter. The auricles contracted rhythmically at a rate of 298-312 per minute. The ventricular rate, at first half that of the auricular, became reduced under treatment with digitalis to one-third of the latter.

Fibrillation of the auricles was subsequently induced. Administration of digitalis was stopped when fibrillation set in. Fibrillation persisted for four weeks, and the normal rhythm was not restored. Auricular flutter then reappeared with a ventricular rate half that of the auricular. Administration of digitalis had the same effect as before in slowing the ventricular contractions and ultimately producing auricular fibrillation. On each occasion the patient's symptoms became relieved coincidently with the lowering of the ventricular rate, the improvement being specially marked after the onset of fibrillation.

* Polygraphic records were obtained on several occasions while auricular flutter existed, and showed a ventricular venous pulse.

The relapse to the condition of auricular flutter with a rapid and inefficient ventricular action seems to indicate that it is advisable in these cases to keep up the action of digitalis after fibrillation has been induced, in the hope that any change in the heart's action may be in the direction of restoration of the physiological rhythm.

SOME POINTS IN CARDIAC MECHANO-THERAPEUTICS: LOCAL TREATMENT OVER THE HEART AND ON SOME OF THE NERVES CONNECTED WITH IT.

By EDGAR F. CYRIAX, M.D., London.

Local treatment over the heart and such manipulations as pressure on the vagus nerve and posterior spinal nerves have been included in the medical gymnastic treatment of heart disease, as far as Sweden is concerned, ever since the days of P. H. Ling (1776-1839). Certain modifications of the original methods were made in the course of time by Ling's successors, notably by Branting (1799-1881) and H. Kellgren (born 1837), and to the latter are due not only many improvements in the technique of the older manipulations, but several new ones. In this paper I propose to describe these various manipulations, with special reference to those employed by Kellgren, paying particular attention to the technique, as this is only too often referred to more or less superficially in the published descriptions.

1. *Vibrations over the Heart.*—Most text-books advise the operator to place his hand directly over the heart before commencing the vibrations, whereas it is in fact usually better not to do so, but to place the hand lower down, as in Fig. 1. For otherwise, unless the application is very brief, pressure over the heart is readily set up, and this, apart from distressing the patient, may easily embarrass the heart's action. The best position of the hand for a longer application (by this is meant one lasting more than about twenty seconds) is, as mentioned, below the cardiac region, the thumb lying over the xiphisternum, and the fingers (which should be somewhat separated) over the 5th, 6th, and 7th intercostal spaces. The vibrations applied with the hand in this position are transmitted to the heart quite as efficiently as when the hand is placed over the præcordia.

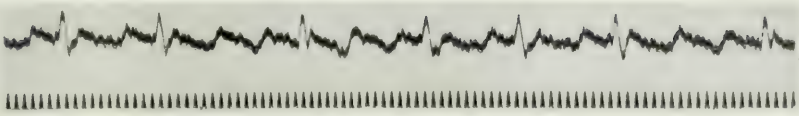

Fig. 1. Auricular flutter. Rhythm, 2 : 1 and 3 : 1. 12 ix. 13.

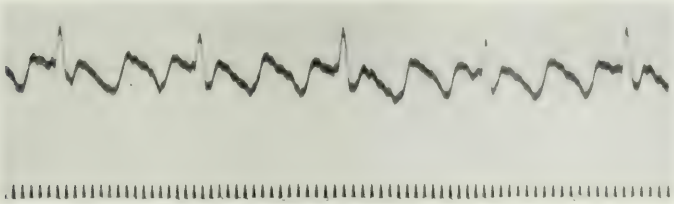

Fig. 2. Auricular flutter. Rhythm, 3 : 1. 13 ix. 13.

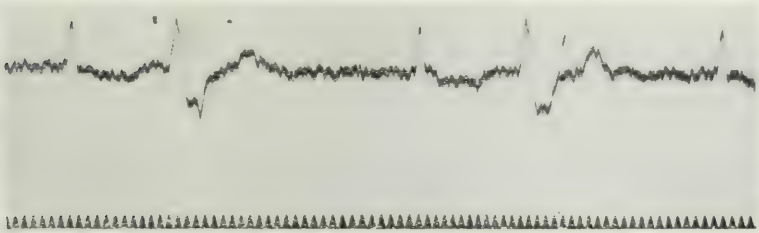

Fig. 3. Auricular fibrillation. The second and fourth beats are extra-systoles. 16 ix. 13.

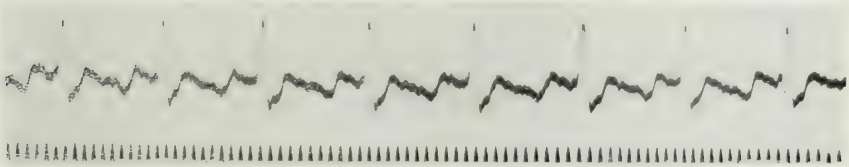

Fig. 4. Auricular flutter. Rhythm, 2 : 1. 14 x. 13.

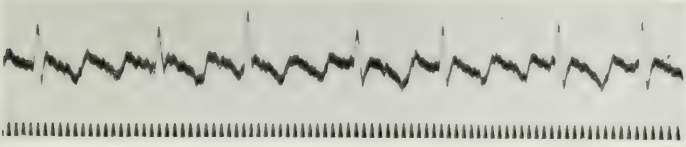

Fig. 5. Auricular flutter. Rhythm, 2 : 1 and 3 : 1. 16 x. 13.

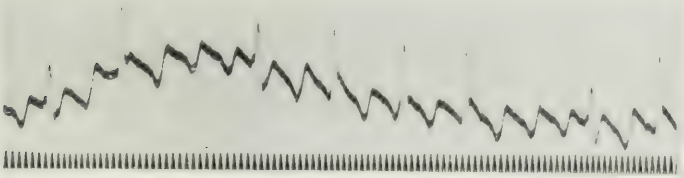

Fig. 6. Auricular flutter. Rhythm, 4 : 1 and 2 : 1. 19 x. 13.

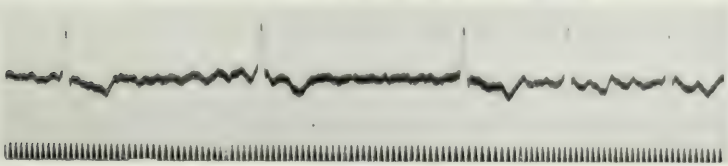

Fig. 7. Auricular fibrillation. 21 x. 13.

All the records were obtained by Derivation II. R hand—L foot. The [illegible] was recorded [illegible] with a magnification of 450 diameters, a deflection of [illegible] 1 millivolt producing [illegible]

The technique for the actual production of the vibrations is as follows:—The joints of the finger, wrist, and elbow are kept as loose as is compatible with the correct execution of the movement. The finger-tips remain in contact with the part of the body to be treated, and must not leave it during the application of the vibration. A rapid alternating contraction and relaxation of some of the muscles of the forearm is then set up. The actual excursion of the movement at the metacarpo-phalangeal and wrist joint varies under ordinary circumstances from one-twentieth to one-eighth of an inch, and the speed of the vibrations is from ten to twelve per second. The amount of muscular force should be minimised: with a gentle vibration the contraction of the muscles of the forearm should be only just perceptible to the sense of touch. The result of this vibration from the operator's hand is the subjection of the part under treatment to vibration, *i.e.*, a series of rapid, wavelike movements of application and removal of pressure. Were the operator's hand removed from the part treated each time that the forearm became relaxed the manipulation, instead of a vibration, would immediately become a series of percussions like a rapid tapotement. Care should be taken to avoid generating the vibrations through strong contractions of the muscles of the shoulder and upper extremity as a whole, or through powerful contraction of the flexors and extensors of the elbow joint, as both these methods cause the manipulation to become jerky, and are so tiring to the operator that it is impossible to apply them evenly for more than half a minute at the most.

The length of time during which such vibrations should be applied over the heart is about 1 to 5 minutes, but if it is considered necessary to administer them for a longer period it is generally best to alternate them either with intervals of rest or else with one or other of the manipulations described below.

The effect of vibrations. Upon a healthy heart these are insignificant—at the most a minimal retardation; neither auscultation nor sphygmographic tracings reveal any change of importance. In the case of heart disease, organic or functional, or accelerated cardiac action found in various constitutional disorders (including fevers, acute specific infectious or otherwise), these vibrations are nearly always attended with marked results. The cardiac action almost invariably becomes slower, stronger, and more regular. As a consequence, in a case of dilated heart, the cardiac dulness may be found to diminish, and in a case of functional or

hæmic murmurs such murmurs may partially or wholly disappear, or change their character, and intermissions may cease. As regards the reduction in the pulse-rate, the amount that can be directly effected by means of vibrations over the heart depends of course on the initial rate. A reduction of 5 to 15 beats in pulses between 90 and 130 is not uncommon, and 15 to 30 or even more in pulses over 130. In the case of organic cardiac disease Levin [1] found as the average of 600 observations that manual heart vibration reduced the pulse-rate by 8 to 12 beats per minute, and that this manipulation was more efficient than any other for this specific purpose.

In explanation of these results a certain amount of experimental evidence exists. However, the majority of investigators have employed mechanical apparatus, and not the hand, to produce the vibrations, and the results from the one source can by no means be held to obtain as regards the other.

Manual heart vibrations produce their effect in two chief ways: (*a*) directly, by propagation into the myocardium and its nerves; (*b*) indirectly, through the medium of the intercostal nerves, medulla and vagus. I cannot agree with the authors [2] who ascribe the entire effect to the indirect channel; probably a faulty technique, producing vibrations of the non-penetrative kind, misled them in some cases. Personally I ascribe a great portion of the effect to the direct path. (*c*) A third factor, namely a psychic effect, follows upon all local heart treatment, but apparently is only of small importance.

2. *Stroking Applied over the Heart.*—The operator places the palmar surface of his hand over the upper part of the præcordia, and executes the strokings from above downwards, or downwards and somewhat outwards. A few repetitions (2 to 6) are generally sufficient. This manipulation has but little physiological effect, a weak reflex through the intercostal nerves being the only one induced. This method should either be replaced by other more effective ones, or else be applied simultaneously with vibration. In the latter case the results are practically identical with those obtained from vibrations alone.

3. *Tapotement over the Heart.*—This can be carried out in a variety of ways, of which the following are the chief:—

(*a*) With the tips of the fingers. This is a method which was formerly employed in Sweden more than at present. The fore or middle finger administers a succession of taps, such as are employed for ordinary percussion, over the præcordia. Personally I hold

that this manipulation has very little beneficial effect, and that it should be replaced by others which are more effective.

(*b*) Light hackings applied with the dorso-ulnar surface of the three inner fingers. The technique is as follows:—The forearm is placed in the mid-position with the fingers slightly separated from one another, the first finger being almost fully extended in both metacarpo-phalangeal and interphalangeal joints, each succeeding one being slightly more flexed (see Fig. 4). By means of extension of the forearm, together with a certain amount of supination and ulnar flexion, alternated by the reverse, the operator's hand applies a series of light blows to the part it is desired to stimulate, the dorso-ulnar surface of the fingers and the distal portion of the ulnar edge of the hand being the actual parts to come in contact with it. It is in every case of the greatest importance that the fingers, wrist, and elbow-joints of the operator be kept as loose as possible during the application of the manipulation. The movement should be as little as possible generated from the elbow-joint, but as much as possible from the joints below it. Keeping the wrist and fingers stiff and generating the movement from the elbow-joint renders the hacking hard, heavy, inelastic, and unnecessarily painful, and can readily aggravate a weak heart, which is still more the case when also the elbow-joint is kept stiff, the movement being then generated from the shoulder-joint. Both these defective methods are, however, advocated by certain authors. (The illustrations in the modern Swedish text-books show some of the above-mentioned faults of technique.) The use of supination and pronation during hackings is of special value in rendering such manipulations light and elastic, and therefore more efficient. This is particularly true of them when applied over the heart.

As regards the duration of such hackings over the heart, a few seconds is a good average, say 5 to 10. The manipulation can be repeated several times in succession, if desired, with suitable pauses in between.

The effects of hacking over the heart are similar to those induced by vibrations, but are more powerful. They are obtained through various channels:—

(1) The propagation of the vibrations through the chest wall into the heart substance (*vide supra*).

(2) A mechanical jerk of the whole of the chest wall and the underlying organs. This acts as a stimulant.

(3) The stimulation of the intercostal nerves, specially those

lying over the præcordia. (*En passant* it should be recalled here that moderate stimulation of every sensory nerve stimulates the heart.) It has long ago been demonstrated that practically every viscus has a corresponding superficial skin area, that disease in the former can produce changes in irritability of the latter (either increase or decrease), and that stimulatory or sedative measures over the skin area in question can produce a similar state in the former. About 15 years ago Abrams [3] found that irritation of the præcordia or pressure on any intercostal space produced a diminution in the size of the heart, specially in cases of dilatation, and that the nearer the irritant is applied to the heart, the more pronounced is the reflex. This confirmed the earlier observations of the older physicians, *e.g.*, Graves,[4] who endeavoured to revive the cardiac action by præcordial blisters. This so-called heart reflex of Abrams has at various times been further investigated by numerous other observers.[5] Heitler [6] discovered that mechanical irritation of the liver, over the heart, sternum, skin, muscles, and bones caused the pulse to become stronger and fuller, the cardiac dulness diminishing. Later on [7] he concluded that a firm pressure on any of these structures caused dilatation of the heart. Abrams [8] considers that a firm pressure in any intercostal space causes inhibition of the heart, and suggests that some of Heitler's results may be erroneous, owing to his not having taken into account the lung reflex of dilatation (*vide infra*). The observations of Sewall [9] and Friedrich [10] that certain murmurs tend to disappear when pressure is exerted on the præcordia by the stethoscope are considered by Abrams to be due to changes in the heart from irritation of the præcordia. Recently Heitler [11] has described changes of various kinds in the pulse resulting from pressures of different strengths and duration over the præcordia.

(4) Increase in the depth of the breathing movements, with resultant improvements in the circulation. Probably there is also a local transient contraction of the lung, with general dilatation elsewhere—the so-called lung reflex of Abrams.[12]

(*c*) Chest clapping. The method of application is the same as for hacking, except that the palmar aspect of the fingers, with or without the distal part of the palm or thumb, in whole or in part, come into contact with the area to be treated. The patient is placed in the standing position with the arms away from the sides. Standing in front of the patient the operator passes his arms around the thorax, so that his hands lie over the suprascapular regions with the palms looking directly forwards (towards himself), his fore-

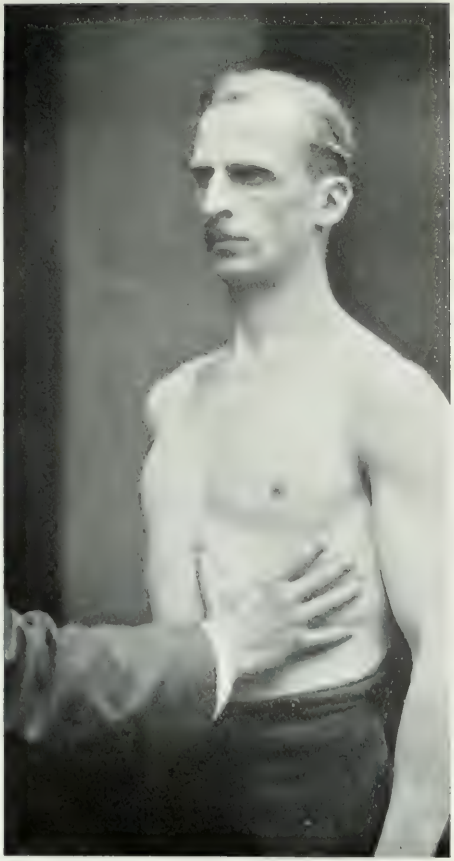

Fig. 1.

Fig. 2.

Fig. 6.

Fig. 5.

Fig. 7.

Fig. 8.

arms being thus completely supinated. He then administers the clappings, first over the suprascapular and scapular regions, then proceeding downwards to the lowest parts of the lungs. After this, gradually pronating his forearms, he proceeds around the sides of the thorax over the lower ribs, and finally, with his forearms pronated, up the front of the chest to above the clavicle (see Fig. 2). The effect, as far as the heart is concerned, is about the same as for heart hacking.

(*d*) Percussion over the heart, using the loosely closed fist. This should not be adopted in cases of actual heart disease or cardiac weakness, but is a good method of cutting short attacks of sudden palpitation. Ten to twenty strokes usually suffice, but these may have to be repeated after a short interval.

4. *Side Shaking.*—The technique is as follows:—The operator, standing in front of the patient, places his hands laterally over the patient's lower ribs, one on each side, as in Fig. 3. Continually drawing the ribs slightly forwards, he executes an intermittent series of soft elastic pressures downwards, inwards, and forwards. The elbow-joints must be kept fairly well extended, and the movement is generated chiefly from the shoulder-joint through alternate movements of abduction and adduction. Beginners are often seen to carry out this movement keeping their elbow-joints flexed to a right angle, the hand being consequently considerably dorsiflexed: the movement becomes in consequence jerky and irritating, and would probably easily do harm in cases of cardiac disease. Care must be taken that during each relaxation the hands are not moved relatively to the patient's thorax: they must maintain their close contact throughout. A coin placed between the palm and the ribs should keep its position during the entire manipulation.

This movement is quite different from the so-called "side-tremble shaking" of certain Swedish authors,[13] which consists in the application of lateral pressure with vibration during expiration. It is also different from Oertel's "sakkadierte Athmung."[14]

Side shaking can be applied from 20 to 30 times in succession during both expiration and inspiration: the whole can then be repeated after a few seconds' pause, during which, if advisable, the patient should take a deep breath.

The effects of side shaking. The method just described is a modified type of lower lateral thorax compression and relaxation such as is employed in artificial respiration in cases of drowning, heart failure during narcosis, etc., and thus the physiological effects

produced by the latter hold good, though in a minor degree, for the former. These effects are:—

(*a*) Direct. The heart is subjected to a series of alternating compressions and relaxations.

(*b*) Indirect. Improvement results in the respiratory function in consequence of pumping of air in and out of the lungs, especially their lower part, and promotion of the pulmonary circulation. There is also a reflex effect through the intercostal nerves (*vide supra*). In addition there results diminution of pressure from the abdomen, which has arisen in consequence of lessened activity or even complete immobility of the diaphragm. Many heart patients exhibit this weakness; it is not uncommon to find that their respiratory movements are purely of the thoracic type; in some cases even a perverted type is met with, the abdomen sinking in with inspiration, and *vice versâ*.

5. *The so-called "Heart Suction."*—The position of the hand is the same as for heart vibration described above. The actual movement consists in drawing the hand downwards and inwards while applying a certain amount of pressure, taking care that the fingers do not glide over the skin, but maintain their original position on it throughout. The pressure is then relaxed, and the hand brought back to its original position. This is repeated during a period of one to five minutes at the rate of about 60 to 120 per minute.

The precise physiological effect is somewhat difficult to explain. The result is very similar to that obtained from side shaking, but there are certain differences, both from the subjective as well as the objective point of view. I think that the difference is chiefly due to the fact that heart suction tends to reduce the pressure below the heart to a much greater extent than side shaking.

6. *Shoulder Hacking.*—The method of executing hackings has already been given. Shoulder hacking is applied over the scapular, suprascapular, and interscapular regions (see Fig. 4). The effects, which to some extent resemble those from hacking over the heart, as described above, are as follows:—

(*a*) Those due to propagated vibration, as mentioned.

(*b*) Those due to transmission of the mechanical jerks, as mentioned.

(*c*) Stimulation of the posterior dorsal nerves.

(*d*) Stimulation of the upper portion of the dorsal part of the spinal cord. The part played by this factor in the production of the resultant phenomena is very difficult to estimate; it appears,

however, that the spinal cord (and brain) are much more sensitive to mechanical stimuli than has generally been supposed.

(c) Respiratory reflexes.

I shall now proceed to discuss the mechanical stimulation of the chief nerves connected with the heart. The method employed is that known as nerve "friction." (This term must not be taken to denote that variety of massage bearing the same name.) The technique is as follows:—The part of the body in which the nerve lies is placed in such a position that the muscles, fasciæ, etc., that lie superficial to the nerve are relaxed. The nerve should then be exactly located from knowledge of topographical anatomy. The operator may then employ either the tip of the first or second finger or the thumb, or the tips of the forefinger and thumb in apposition; the exact method in each case will be considered when describing the technique for each nerve. The operator places the digit or digits to the side of the nerve to be treated, and moves it (or them) across the nerve at right angles to its long axis, a slight amount of pressure being applied at the same time. It must here be insisted upon that it is of the utmost importance that the skin of the patient and the manipulating digit should move as one over the nerve, as otherwise merely a scratch of the skin results, the nerve being left absolutely unaffected. As soon as the nerve has been traversed the pressure is released; then either a friction is applied in the same manner, but in the reverse direction, thus arriving at the original position, or the digit is passed lightly back to it. The manipulation is repeated several times, each individual friction occupying about a quarter of a second.

The commonest mistakes made by beginners in administering nerve frictions are, first, that the finger applies a great amount of pressure before the friction is executed; and, secondly, that the actual friction is executed by *slowly* passing the finger over the nerve. This is exactly the reverse of what should be done, as the nerve tends to become paralysed in consequence of such a degree of pressure being applied, and, if too slowly applied, the manipulation fails to cause any stimulation of the nerve.

1. *Vagus Nerve.*—The patient's head is flexed forwards and slightly towards the side in which lies the nerve to be treated; the site of stimulation may be anywhere between the levels of the upper and lower borders of the thyroid cartilage, according to the configuration of the patient's neck. Standing at the side of or behind the patient, the operator places the tip of the forefinger as in Fig. 5, just internal to the sterno-mastoid, and presses gently

backwards until his fingers lie against the pre-vertebral muscles, just over the carotid artery, whose pulsations can be plainly felt. The friction is executed transversely to the course of the nerve from within outwards. A single friction often suffices to produce the desired effect, but when this is not the case attempts should not be made, unless under very exceptional circumstances, to apply more than a few (say 3 to 5) in succession.

The result as regards the heart is inhibition, varying from very slight to very marked. This effect may take hours to pass off; indeed, some cases of accelerated cardiac action can be permanently cut short. The effects of mechanical stimulation of the vagus by means of compression, etc., have been studied in human beings by a large number of observers,[15] and recently the electro-cardiograph[16] has been employed to interpret the results. Practically all the observers have found the inhibitory effects mentioned above; as regards other ones on the viscera, etc., the results were not so constant, but the consideration thereof falls outside the scope of this paper.

2. *Posterior divisions of the dorsal nerves,* especially the 4th and 5th on the left side. The operator may stand (or sit) either at the side of or behind the patient, and according to which position he adopts he will employ the tips of either the fingers (two or three), or the thumb, or the forefinger and thumb in apposition. These are placed to one side of the erector spinæ, and the frictions executed transversely across its segments. During the application of the actual friction a distinct snap of the erector spinæ is experienced each time. Should it not be felt, it is an indication that the friction has been incorrectly applied.

These frictions should be executed fairly rapidly, about two or three per second, and from five to fifteen in succession. This may have to be repeated with short pauses. If desired, these frictions can be combined with vibrations. The operator, standing or sitting at the right side of the patient, applies the frictions with his left hand, the vibrations with his right.

The question of the precise cutaneous area that corresponds to the heart has given rise to some discussion. This is partly due to the fact that while Head's areas are superficial ones, other observers, including the Swedish school, have dealt with deep ones. Head [17] gives the heart area as being the one supplied by the first, second, and third dorsal nerves. He states, however, that in cases of heart disease, more especially aortic, the pain is referred along the first to fourth nerves; in angina pectoris it may in addition be

referred along the fifth, sixth, and seventh, and even the eighth and ninth nerves, and is always accompanied by pain over certain cervical areas. Mackenzie [18] gives the area as being the one supplied by the first to the fifth dorsal nerves. Bartenstein [19] found tender areas in the cervical and upper dorsal regions. Abrams [20] found tenderness at the side of the third, fourth, and fifth dorsal vertebræ, and regards paravertebral tenderness between the fourth and fifth segments as a sign of vagus hypertonia.[21] Ballint [22] pointed out a possible source of error in the fact that the first five dorsal zones were normally hypersensitive. Friedman [23] found tenderness of the third, with or without the second and fourth dorsal spinous processes in heart neuroses, the intercostal nerves being unaffected. Nöggerath and Salle [24] found cutaneous hyperæsthesia in heart disease in the fourth and fifth dorsal segments. Kürt [25] found that a zone at the level of or just above the fifth rib was more sensitive both in cases of normal heart and in angina pectoris. Wetterwald [26] has described tender spots in cases of angina pectoris as occurring in the course of the intercostal nerves as well as on the brachial and cervical plexuses. Personally I have ascertained by means of nerve frictions that the areas most commonly affected in heart disease are situated in the fourth and fifth dorsal nerves on the left side.

3. *Intercostal Nerves.*—Frictions on these nerves are executed with the thumb and forefinger in apposition, and are carried out from before backwards or the reverse over the affected nerves: they may be administered several times along the course of a single nerve, or else along several nerves, traversing successive ones from above downwards. The effects resulting from these frictions have been considered under tapotement.

4. *Posterior Divisions of the Cervical Nerves.*—The patient's head must first be extended backwards a little. Standing at the side of or behind the patient the operator places the tips of two or three laterally approximated fingers on the further side of the neck, and the tip of the thumb on the nearer side. The frictions are executed by simultaneously (*a*) approximating the opposing digits; (*b*) still further flexing the interphalangeal joints; (*c*) moving the hand and forearm backwards *en masse*. In order to repeat the friction the digits are merely brought back lightly to the original position, as the frictions in the reverse direction fail to produce the desired effect (see Fig. 6).

The results, as far as the circulatory system are concerned, are:—

(*a*) Sensory effects. A general feeling of stimulation is experienced, together with a feeling as of cold (or warm) shivers passing down the spine. In some persons this may be felt in the arms, face, or even as far as the toes, or various irregular distributions of sensation may result. These sensations are, in my opinion, due to a wave of vaso-constriction passing from above downwards.

(*b*) The heart's action may become steadier and stronger, specially in cases of cardiac weakness. In one case of cardiac dilatation, the pulse being markedly dicrotic, cervical nerve frictions had the immediate effect of reducing the pulse-rate from 150 to 130 per minute, the dicrotism disappearing.

5. *Third Cervical Sympathetic Ganglion.*—Friction on this ganglion, as far as the heart is concerned, is only employed in cases of bradycardia. The technique is as follows:—Standing at the side of the patient, the operator first flexes the latter's head slightly forwards and towards the side to be treated. He places the tip of his forefinger between the clavicular insertion of the sterno-mastoid and the trachea, as in Fig. 7, and presses it directly backwards until it lies against the prevertebral muscles. The frictions are then applied transversely in both directions. Acceleration of the pulse-rate generally ensues.

In connection with stimulatory measures used for the nerves of the heart another one may briefly be referred to, namely, a firm bilateral pressure at the sides of the second dorsal vertebræ, as originally discovered by Abrams. According to him this manipulation induces inhibition of the heart, with complete stoppage of the pulse;[27] but I cannot altogether agree with him as regards these statements. Total stoppage of the radial pulse certainly frequently ensues, and pressure only on one side can cause changes in only the one pulse. The accompanying figure (Fig. 7) is a specimen of the curve readily obtainable in many individuals. But I have not found stoppage of the heart, which as far as can be judged by auscultation continues its beat unchanged, neither does the pulsation in the larger arteries, as far as can be estimated by palpation, appear to be affected by this manœuvre. It appears to act by inhibiting the pulse-wave in the more peripheral portions of the arteries, though I cannot at present offer any explanation as to through which channel it acts. I have quoted this to show that I do not think that the last word has been said regarding stimulatory nerve treatments as applied to heart disease.

In connection with the above description of the various manipulations it is as well to state that they are not all to be

applied to every case; an intelligent selection must be made to suit each individual. Also I wish to point out that I do not employ such local passive heart treatment by itself alone; even in the very worst cases it is always of advantage to combine it with other passive movements, such as abdominal petrissage and practising deep respirations, and wherever possible active movements (with or without resistance) should be added in order to reduce the blood-pressure and to promote the venous return.

REFERENCES.—[1] *St. Petersb. med. Woch.*, 1897, xiv. 292; *Tidskr. i gymn.*, 1892, 698. [2] Heiligenthal, *Die Anstalt für mechanische Heilgymnastik in Baden-Baden*, 1884; Murray, *Tidskr. i gymnastik*, 1887, 611; Nebel, *Die Bewegungskur mittelst Schwedischer Heilgymnastik und Massage*, 1889, 205; Lorand, *Wien. med. Presse*, 1895, xxxvi. 1546; Bjerksten, *Finsk. läk.-sälls. handl.*, 1901, xliii. 779. [3] *Med. Rec.*, 1899, lv. 562; *Med. News*, 7th January 1899; *Phila. Med. Journ.*, 1900, v. 66; *Med. Rec.*, 1901, lix. 10; *Amer. Med.*, 1903, v. 11; *Lancet*, 1903, ii. 1052; *Presse méd.*, 1907, 209; *Med. Rec.*, 1907, lxxii. 969; *Brit. Med. Journ.* 1912, ii. 931. [4] Quain's *Dict. of Med.*, 1885, i. 415. [5] Satterthwaite, *Diseases of the Heart and Aorta*, 1905, 234; Merklen and Heitz, *Bull. et mém. soc. méd. d. hôp. de Paris*, 1903, xx. 905; Heitz, *Lyon méd.*, 1905, cv. 847; Zulawski, quoted *Deutsch. med. Woch.*, 1910, xxxvi. 627. [6] *Wien. klin. Woch.*, 1899, xii. 1303; *Centralbl. f. inn. Med.*, 1901, xxii. 265. [7] *Ibid.*, 1904, xxv. 13. [8] *Presse méd.*, 1910, 938; *Spondylotherapy*, 1912, 205, 230. [9] *New York Med. Journ.*, 1897, lxvi. 758. [10] *Lehrbuch der physikalischen Untersuchungen*, 1881. [11] *Wien. klin. Woch.*, 1912, xxv. 1729. [12] *Med. Rec.*, 1899, lv. 562; *New York Med. Journ.*, 1900, lxxi. 57, 58; *Amer. Med.*, 1902, iii. 271; *Presse méd.*, 1907, 209. [13] Wide and Rancken, *Handbok i Gymnastik*, 1912, 71; Kleen, *Handbok i Massage och Sjukgymnastik*, 1912, 252. [14] *Handbuch d. allg. Therapie d. Kreislaufstörungen*, 1885; *Therap. Monatsch.*, 1887, i. 372, 424, 477; *Verhandl. Kongr. inn. Med.*, 1888, ii. 201; *Münch. med. Woch.*, 1889, 627, 650, 665; *Klin. Streit. u. Zeitfragen*, 1889, iii. 1. [15] Branting, *Efterlemnade Skrifter*, 1882, 179; Neumann, *Lehrbuch der Leidesübungen*, 1856, i. 272; Steudel, *Praktik der Heilgymnastik*, 1860, 136; Hartelius, *De fysiska Utsvettningarna hos människan*, 1868, 120; Czermak, *Zeitschr. f. Naturw.*, 1865, ii. 384; *Prag. Vrtljahrschr.*, 1868, c. 30; Concato, *Riv. clin. d. Bologna*, 1870, ix. 1; 1872, 2nd ser., ii. 161; De la Harpe, *Bull. soc. méd. de la suisse rom.*, 1870, iv. 75; Cerenville, *Ibid.*, 1874, viii. 110, 303; Quincke, *Berl. klin. Woch.*, 1875, xi. 189, 203; Thanhoffer, *Centralbl. f. d. med. Wiss.*, 1875, xiii. 403; Wasilewski, *Jahrb. ü. d. Fortschr. d. Anat. u. Phys.*, 1876, v. Phys. Abth. 54; Cardarelli, *Arch. ital. de biol.*, 1891, xiv. 205; Dubois, *Korr.-bl. f. Schweiz. Aertze*, 1894, xxiv. 297; Siciliano, *Arch. ital. de biol.*, 1900, xxxiii. 338; Volhard, *Deutsch. Arch. f. klin. Med.*, 1909, xcvii. 348; Hering, *Munch. med. Woch.*, 1910, 1931; and *Zeitschr. f. exper. Path.*, 1911, x. 6, 14. [16] Robinson and Draper, *Journ. Exper. Med.*, 1912, xv. 14; Rihl, *Zeitschr. f. exper. Path.*, 1912, xi. 341; Ritchie, *Quart. Journ. Med.*, 1912-1913, vi. 47. [17] *Brain*, 1893, xvi. 61, 132. [18] *Med. Chron.*, 1892, xvi. 293. [19] *Jahrb. f. Kinderhlk.*, 1903, lviii. 473. [20] *Spondylotherapy*, 1910, 75. [21] *Ibid.*, 1912, 504. [22] *Zeitschr. f. klin. Med.*, 1909, lxvii. 7. [23] *Neurol. Centralbl.*, 1910, xxix. 412. [24] *Jahrb. f. Kinderhlk.*, 1911, lxxii. (N. S. xxiv.) 71. [25] *Münch. med. Woch.*, 1912, 1524. [26] *La prat. d. agents phys.*, 1912, iii. 105; and *Manuel pratique de kinésithérapie*, 1912, fasc. v. [27] *Spondylotherapy*, 1912, 170, 229.

A NOTE ON MODERN PRESCRIPTION-WRITING.

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Even a casual survey of the doctors' prescriptions to be found in the records kept by pharmacists reveals a curious but quite unmistakable alteration in the manner of prescribing during recent years. That is to say there is an increasing tendency for the physician to order drugs under names of a more or less fanciful and pseudo-descriptive character. Many of these names are written out in English, instead of being, as formerly, invariably in Latin. The result of this is that one frequently comes across prescriptions written in a curious mixture of English and Latin, so that on the one hand the prescription lacks its pristine air of dignity, and, shall we say, mystery, while on the other the patient is put into the position of being easily able to read, in whole or in part, his prescription, the trade name of whose constituent parts often captures his fancy, and he readily gets into the habit of ordering these drugs for himself and his friends.

If we inquire into the reason for this change in practice it is found to be capable of an easy explanation. It is very largely the outcome of the great commercial activity of the numerous and excellent manufacturing chemical and pharmaceutical firms which have of late years sprung into existence. These firms have devoted themselves to the improvement of already existing preparations as regards palatability, standardisation, etc., and have presented them in forms which have secured for them a considerable amount of favour. Special proprietary names for these preparations have sometimes been successful in catching the public ear. Many physicians have got into the habit of ordering X.'s preparation in place of the ordinary official one, and gradually it has come about that an enormous sale of these preparations takes place annually, more especially among those members of the public who delight to physic themselves. This is not a desirable state of matters from any point of view, and one point which is often forgotten is that the ordinary pharmacist is gradually being converted from a highly skilled professional man into a mere retailer of proprietary goods.

But there is still another aspect of this question. Some of these enterprising firms have established laboratories for the purpose of pharmacological research, and have gradually evolved

by synthetic and other methods several valuable chemical bodies which are, in some cases at least, new remedies. To their credit must be placed the discovery of these new therapeutic agents. Here again a trade name has been coined and is employed instead of the proper chemical designation of the drug, and in this manner we have another series of pseudonyms put forward for our use by the originators of these substances. There is good reason to believe that the medical profession cannot be said to have resisted very strongly these influences which have tended to alter the established practice of the profession in the manner of prescribing, and it must assume a certain amount of responsibility for the present state of affairs. By way of extenuation it may be urged, and to some extent with cogency, that the trade designation may be handier than the more cumbrous alternative chemical designation, but this does not lead us to anything other than this, that the easier way has been adopted, whereby it has become possible and increasingly less difficult for patients to prescribe for themselves. Chemical firms have recognised this themselves, and some of them, though by no means all, have taken steps to prevent the sale of their commodities to the public without a prescription.

It is right to say here that various firms have affixed their own trade name to their own manufacture of a standard chemical substance, and that in some cases a slight modification exists between their own article and the product of a rival firm. The drugs, however, are substantially the same.

One cannot but think it would be well were the profession to revert to its former practice of using Latin designations in all cases where such are available, not only for the sake of avoiding a too free education of the public in matters whereof they would be better not to have too intimate a knowledge, but also for the maintenance of the older and better forms of prescribing. The general return to the former usage would in no way prevent a physician employing the particular product of a particular firm where he considered a better effect to be obtainable in a given case, and a complete liberty of action would be left to the individual prescriber.

CLINICAL RECORDS.

A CASE OF TEMPORO-SPHENOIDAL ABSCESS: RECOVERY.

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T. M., æt. 21, was first seen at the Eye, Ear, and Throat Infirmary on 7th August 1913, complaining of otorrhœa, which had lasted all his life. The discharge had increased greatly during the week previous to his seeking advice, and he had also suffered from rather severe headaches during that period. On examination, a large polypus was seen nearly filling the right meatus; it was bathed in very fœtid pus. Functional examination showed complete deafness on that side, and the labyrinth did not respond to stimuli. The temperature and pulse were normal. The left ear was healthy.

A radical mastoid operation was performed on the following day. The antrum was found to be filled with granulations, and the dura of the middle fossa was exposed and covered by granulations. The ossicles were not seen, and the oval window was empty. On smoothing the anterior surface of the spur with the chisel the face twitched once, and on waking from the anæsthetic the patient was found to have a facial paralysis which became complete, but which is now passing off. A few days after the operation the patient began to complain of headaches; he slept badly and was slightly off his head at night; the temperature was normal and the pulse did not fall below 60; examination of the nervous system was negative. The mastoid cavity appeared clean; there was very little discharge. Ten days after the operation a profuse discharge came from the ear during the night, soaking the pillow; the headaches were at once relieved and the patient felt very well. It was supposed that a sub-dural abscess had evacuated itself, but as the patient appeared very well there seemed to be no indication for interference. He continued to feel well, and the discharge was slight, till the 24th August, when the headaches had returned and there was more discharge; pulse 50; temperature 98·2° F. On the 25th the wound was reopened and pus was seen lying on granulations springing from the dura; on probing this area the probe slipped directly upwards into the brain. The bone was freely removed, exposing the dura for an area larger than a penny-piece; the granulations were removed, the dura was incised, and sinus forceps were passed into the brain, opened and withdrawn, when at once about two ounces of very fœtid pus were evacuated. (The pus was examined by Dr. Struthers Stewart, who obtained a streptococcus in pure culture.) A large drainage tube was inserted into what was felt to be quite a large cavity. The posterior wound was left open,

and the patient returned to bed. Considerable difficulty was experienced in maintaining drainage, and the pulse, which fell to 40 after the operation, continued to be slow (40 to 48) for a fortnight, and the temperature subnormal (97·8° to 98·2° F.). The pulse rose to 50 on the 8th September, and the discharge thereafter gradually diminished. The drainage-tube was finally removed on 29th September. Since that date the patient has done well: the posterior wound has closed: he has gained in weight, and is now thinking of returning to work. This case illustrates the lack of symptoms and physical signs in a right-sided lesion of the brain and the consequent difficulty in diagnosis.

CASE OF CHILD IN WHOSE ŒSOPHAGUS A HALFPENNY HAD REMAINED FOR EIGHT YEARS.

By W. G. PORTER, F.R.C.S.,

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THE patient, C. B., æt. 11, was admitted to the Royal Hospital for Sick Children under the charge of Dr. Fowler, to whom I am indebted for kindly allowing me to record the case. He complained of rather indefinite gastric symptoms of three weeks' duration, but on the history being elicited the father stated that at the age of four the boy had swallowed a halfpenny and had never been the same since. The boy weighed 2 st. 10 oz. on admission, and was small for his age and poorly developed. An X-ray photograph was taken, and showed a foreign body in the œsophagus between the 6th and 7th dorsal vertebræ. He was referred to me for œsophagoscopy, which was done under general anæsthesia: the halfpenny was seen lying low down in the œsophagus, nearly edge on. On introducing the forceps to seize the coin it slipped away out of sight into the stomach. On carefully inspecting the œsophagus where the coin had been lying, no ulceration or lesion of any kind could be detected. The patient remained in hospital for a fortnight after this procedure: he improved extraordinarily in health during that time, and increased five pounds in weight. A skiagram was taken again before his discharge, and the halfpenny was not seen in any part of the œsophagus or abdomen. The boy stated one day that he had passed it, but it was not found in the stools.

The case presents several points of interest. First, the length of time the coin had remained impacted without causing any obvious injury to the œsophagus; secondly, the indefiniteness of the symptoms, more especially the absence of dysphagia: and lastly, the extraordinary and rapid improvement after the coin had been dislodged, showing that it really was the cause of the illness.

CLINICAL TEACHING.

DISEASES OF THE EAR, NOSE, AND LARYNX.

[*Contributed.*]

Before offering any suggestions in regard to the improvement of existing arrangements for instructing the undergraduate in diseases of the ear, nose, and throat, it is essential that the teacher should have in the first place a clear conception in his own mind as to the kind of knowledge which he aims at imparting to his pupils. He must keep in view the fact that in introducing them to a specialty his object should be in no sense to give them the education of a specialist, but merely to increase their general all-round knowledge of disease. For this purpose he must make them acquainted with the commoner affections of this part of the body, and point out their bearing upon general diseases. This information may be imparted in two ways—by short descriptive accounts given in a systematised manner, and by demonstrating a series of illustrative clinical cases which the student must have frequent opportunity of seeing and examining for himself. In this way he will become conversant with the methods used in diagnosis, and obtain some facility in the handling of the special instruments employed for the purpose, and acquaint himself with the appearances presented in health and disease. Where specialism is aimed at then post-graduate teaching and training are required.

Having thus briefly sketched the end in view, we must next glance at the facilities which are at present offered for imparting such knowledge. During the *annus medicus* three courses, each of nine weeks' duration, are held in the Royal Infirmary. These are conducted simultaneously by the two recognised lecturers on the subject, one the University lecturer, the other a lecturer whose course qualifies for the University degree in medicine and surgery. Each in his capacity as surgeon to the Ear and Throat Department is in charge of out-patients and of a certain number of surgical beds. The clinical material at their disposal for teaching purposes is abundant. The lecturer has the help of the assistant-surgeon attached to his department, and on the University side, in addition, the further assistance of a clinical tutor. The method of conducting the nine weeks' course is as follows:—The class meets as a whole twice weekly in the lecture room to receive a descriptive account of the commoner diseases. For clinical purposes a subdivision of the class into two parts is made, so that the members of each section may attend once a week for one hour in the out-patient department, where illustrative cases are demonstrated and

examined. Here a further subdivision is made, half the members of the section being taken by the lecturer and half by the assistant-surgeon.

Each week three or four tutorial classes are conducted by the clinical tutor in the afternoon, each member of the class being given the opportunity of attending for one hour, receiving instruction in anatomy, methods of diagnosis, etc. From the above account it is evident that provision is made for each student to have four hours' tuition per week, two systematic and two clinical. That is to say, the student has not more than thirty-six hours allotted to him for the study of diseases of the ear and throat.

The average number of students attending the class of the University lecturer during the year is 115. The maximum number attending each separate course is understood to be limited to 50. It is difficult, however, to enforce this arrangement, consequently the actual number attending the course varies.

The question which the teacher must naturally ask himself is, How far does he succeed in achieving his purpose? What working knowledge of ear and throat disease has he really imparted even to the most hard-working member of his class? As regards the systematic side of the course his efforts are probably successful. A large body of men can be satisfactorily taught in the lecture room with the aid of diagrams and blackboard illustration. As regards the clinical side of his teaching he cannot but feel that the great majority of his class have only received an imperfect training in practical matters. He arrives at this conclusion on two grounds—first, the short period of time allotted to the clinical study of the subject (nine hours in the out-patient department and nine tutorial classes), and secondly, from the fact that the practical classes in spite of subdivision are as a rule too large to permit of each student handling a sufficient number of patients to give him the requisite clinical knowledge.

In order to rectify the first difficulty the systematic teaching might be curtailed or even dispensed with, the student being provided with a greater number of printed class slips than he at present receives, and at the same time he might be advised to read one of the smaller text-books upon the subject. The two hours each week hitherto devoted to the lecture would then be given over to clinical teaching. The lecturer, however, is at once met with a fundamental difficulty. He has no accommodation for the purpose. Under existing arrangements his colleague is using the out-patient department during these hours, and giving his class their

clinical instruction. Until the pavilion is enlarged and remodelled on the lines of the ophthalmological pavilion providing each surgeon with a complete department this difficulty will continue to exist. A structural change in the existing pavilion should be comparatively easy, as the top floor at present utilised for nurses' quarters might be enlarged and adapted for wards, and thus provide for a second out-patient department by rearranging the existing accommodation.

With the exception of gynecology, probably no clinical subject in the curriculum is more difficult to teach practically to large numbers of men than diseases of the ear and throat. It is exceptional for a patient to present any external sign which is demonstrable to a class. He can only be examined by one individual at a time, therefore, and in connection with throat and laryngeal diseases it is obviously unfair to submit a patient to examination by more than a very limited number of students. Small practical classes are therefore most necessary. Can any improvement be suggested to bring this about? The scheme which naturally suggests itself is along the lines of that recently adopted for the teaching of clinical medicine in the Royal Infirmary. The two surgeons and assistant-surgeons in the department should be made University lecturers, so that their services as teachers might be more freely utilised, and the students could be more equally distributed. In this way smaller classes would be more efficiently taught, and the teacher would have the satisfaction of feeling that his efforts were meeting with a larger measure of success than they do under existing arrangements. The importance of a working knowledge of the specialty is fully recognised by practitioners of medicine, and if the time given to the subject were better spent than it is at present, the efficiency of the medical practitioner of the future would be increased.

In connection with the examination of students in the final professional in medicine an improvement might be effected in the method of testing the candidate's knowledge of ear and throat disease. At the present time patients are sent to the surgical wards, and the examination of the candidate is conducted by one or more of the general surgeons. As a substitute for this procedure small batches of students might attend the ear and throat and ophthalmological departments (because the same anomaly also exists in connection with this part of the final examination), and their knowledge be tested more satisfactorily by the teachers in the respective specialties.

REPORTS OF SOCIETIES.

Edinburgh Obstetrical Society.

VALEDICTORY ADDRESS.

By J. HAIG FERGUSON, M.D., F.R.C.S.,
Retiring President.

After thanking the Society for the support he had received during the period of his presidency, Dr. Haig Ferguson said:—

Our Society is about to enter into the 75th year of its existence, and many of our younger Fellows will have the privilege of seeing the centenary. This, I doubt not, will be celebrated with the dignity and éclat equal to that which I so well remember characterised its jubilee, under the presidency of my honoured friend, the late Dr. Underhill. Time will show if Dr. Ballantyne's foreshadowing of the centenary will be an accurate one or no. It would not be inappropriate if *he* were in the chair on the occasion, when he would be able to contrast prophecy with facts, and perhaps at the same time demonstrate that truth is sometimes more wonderful than fiction, and reality than romance.

Gentlemen, if unfortunately we as individuals are growing older, and some of us less energetic, yet our Society is renewing her youth, and gaining in vigour and in numbers as the years roll on.

I welcome you to-night to our first meeting in our new hall, which I believe opens up a new era in our history. We have combined with our sister Society (the Medico-Chirurgical Society) in securing through the courtesy of Sir Robert Philip this hall as our common meeting-place, and in the acquisition (along with the authorities of the Royal Victoria Dispensary) of a first-class epidiascope, which latter is now an essential for modern scientific meetings. The mutual advantages of this arrangement, not only to the societies themselves but to the medical body corporate, are obvious—"εἰ τοῦ θέρμου ἡ ἴσχυς."

We are entering on this new era with fresh and growing vitality. In these days of specialism there is an increasing tendency to drift apart, and therefore a common meeting-ground is a healthy antidote to such a state of matters. The more societies have in common, and the more they see of each other's work (as in the case of individuals), the more as a rule will they respect each other, and the less chance is there of misunderstandings being likely to arise. I hope this co-operation and unity may pave the way to occasional meetings in common, to discuss subjects of mutual interest, which can with advantage be looked at from different points of view, thus giving the discussions perhaps a wider interest and importance. No better augury of this could be possible than Major Leonard Darwin's address last month, in which he so happily inaugurated our new venture.

Our librarian informs me that we have met in St. Andrew's Square for forty-eight years, except for a short break in 1903-1904, when the St. Andrew's Hall was undergoing renovation, when we removed temporarily to 18 George Street. Before that the Society met in the New Town Dispensary (where it originated), subsequently in 13 Queen Street, and then in the houses of the

office-bearers in rotation, returning again to the New Town Dispensary in 1847, and moving to 5 St. Andrew's Square in 1865. In June 1880 there was a proposal that we should join with the other Edinburgh scientific societies and meet in a common hall. Drs. Craig and Berry Hart were chosen as our representatives to attend the meeting and report to the Society. Under the date, June 30th 1880, it is minuted :—"Report received, and it was agreed not to join in the scheme."

Let us hope that in the years to come our successors in this hall will look back as unashamedly as we can do to-night to those who have gone before us ; and on this historic spot, formerly owned by Mr. Richard Lawson of the High Riggs (who is said to have heard at the Mercat Cross the dread summons of Pluto before Flodden), may we and those who follow us feel the inspiring presence of our goddess Lucina and her heaven-born art.

Reference to our two last volumes of *Transactions* shows an array of practical and scientific contributions which reflects infinite credit on the activity of our fellows, and which would do honour to any society in their varied interest and importance. . . .

The discussions have been particularly well maintained, and on two occasions we were favoured by the presence of distinguished guests who added greatly to the value of these discussions in the domain of veterinary medicine and pathology respectively.

While, of course, welcoming papers of scientific and practical interest from the teacher and specialist, we are particularly anxious to encourage short contributions and records from the general practitioner on obstetric cases. There is a feeling of diffidence on the part of the practitioner to come forward, in case of severe or adverse criticism. I can assure them that they need have no fear of such treatment at the hands of the Society. Those of us who are teachers have got an immense amount to learn from the practitioner, and the practitioner may possibly learn something from the specialist. What we want is a free and fearless exchange of views and opinions, a record from the vast fields of experience of the general practioner, in whose hands the chief obstetric practice of the country is. Teachers are sometimes apt to forget the special difficulties of the practitioner, and it would certainly be to our mutual advantage to have them from time to time impressed upon us.

In passing it may be interesting to glance for one moment at the effect the National Insurance Act has had on the teaching of obstetrics and on maternity hospitals in Scotland.

You may possibly remember that in my address last year I ventured to forecast the difficulties which I feared might follow the working of the Act from a maternity point of view if the details were to be carried out according to the literal interpretation of the measure. Fortunately the large powers possessed by the Commissioners and the influence of the General Medical Council, in conjunction with an amending Act, have enabled wise counsels to prevail, and many difficulties have now been removed.

The statistics which I now present of the Scottish Maternity Hospitals show, however, by the marked decrease of cases in every instance, that some re-adjustment is still necessary before the pendulum swings back again to a better state of equilibrium, as I think it will certainly do.

In Glasgow, from 1st January to 31st August of this year, there is a decrease in indoor and outdoor cases of 717.

In Aberdeen for the same period for all cases a decrease of 145.

In Edinburgh a decrease of 381.

In Dundee the calculation is begun each year on 15th May: for the year 1912-1913, therefore, the figures include January to May 1913, and they show a decrease of 121 for that period, as compared to 1911-1912.

Meantime, therefore, our field of teaching is undoubtedly restricted, our output of nurses is consequently less, and our difficulty in meeting even the bare obstetric necessities of the medical student is correspondingly increased.

It is impossible yet to say how the women themselves will benefit in the long run both immediately and remotely.

Two papers on somewhat similar lines (both of which will repay perusal) have recently appeared, dealing with the question of obstetric teaching and the improvement of the standard thereof.

One is from America, from our Honorary Fellow, Professor Whitridge Williams, who deplores the fact that in America "we have as yet failed to train practitioners competent to meet the emergencies of obstetrical practice." This is a serious indictment, but entirely justified by the statistics he produces, where the general practitioner in some parts of America is shown to have a higher mortality in his obstetric practice than the midwife, owing probably to the fact that the imperfectly trained practitioner does not recognise his own limitations, with the result that he attempts what he really is not competent to deal with, often with deplorable consequences.

Professor Williams contends that practical midwifery must be regarded as a branch of surgery, and that the only feasible method by which assistants can obtain the necessary facility in surgical methods and technique is by the closest co-operation with the gynecological department, or preferably by the union of the two departments.

In this opinion I entirely agree, and I venture to think that one cannot over-estimate the benefits to midwifery which accrue from its close association with gynecology, benefits which in my opinion far outweigh the more usually recognised advantages of a knowledge of obstetrics to the gynecological surgeon. To this end Professor Williams urges the extension of obstetric charities—free hospitals and out-patient services for the poor, and proper semi-charity hospital accommodations for those in moderate circumstances, keeping in remembrance the fact, as recently stated so admirably by Mr. Arthur Balfour, that "to look upon a hospital merely as a place where those who were sick or hurt went for healing was a very narrow view, because, unless it was also a place in which the future leaders of the medical profession were to be trained, its usefulness would die out with the present generation."

Whitridge Williams further advocates the gradual abolition of midwives in our large cities and their replacement by obstetric charities. He regards attempts at improving midwives as an "almost impossible task," and suggests the greater development of visiting obstetric nurses, very much on the lines of our own Jubilee Nurses.

I fear, however, midwives are a necessity, especially in rural districts, and moreover, their continuance is insisted on in our own Insurance Act, but I strongly hold that *if they are efficiently supervised* they really essentially conform to Whitridge Williams's definition of visiting obstetric nurses.

It is this proper supervision that we are so anxious to obtain in a Scottish Midwives' Bill. Most fervently do we hope that such a measure may soon be enacted. It is a necessary antidote, so far as the welfare of the women and their infants is concerned, to the maternity provisions of the Insurance Act,

and no opportunity should be lost in urging upon the Government and upon our members of Parliament the pressing need of such a measure, and the reasons therefor.

Another important point referred to in this address is the education of the American laity to the fact that "poorly trained doctors are dangerous, that most of the ills of women result from poor obstetrics, and that poor women in fairly well-conducted free hospitals usually receive better care than well-to-do women in their own homes." The British laity would also be none the worse of a measure of information in this respect. It is amazing the ignorance of even otherwise well-informed people concerning this.

Only the other day I was asked in open Court by a leading K.C. : –"Do you mean to tell the jury that it is better for a poor girl (in this case an unmarried girl) to go for her confinement to a Maternity Hospital than to be confined in a comfortable home (which in her case meant a small cottage), surrounded by a fond father, a doting mother, and loving sisters?" He said, on my assuring him that such was the case and that it was the general trend of modern medical opinion, that this was a strange and extraordinary statement to make. I may add, however, that the intelligent jury did not share his opinion.

The second writer I have referred to is Dr. Victor Bonney of London, who pleads for the necessity of recognising midwifery as a branch of surgery, and for the conduct of all labours in a true surgical environment. He also urges the importance of educating the public to the importance of labour being properly conducted under the principles of true surgical asepsis. His paper is well worth attention.

These ideals are what we should aim at, and each of us can do something, however small, in helping to bring them about.

But—

> "Let no man think that sudden in a minute
> All is accomplished, and the work is done ;
> Though with thine earliest dawn thou did'st begin it,
> Scarce was it ended in thy setting sun."

It is my sad duty as your retiring President to present to you a short notice of those Fellows who have passed away during my term of office, and whose loss we are now called on to deplore. Their work in this world is already sealed by the past, whereas yours (at least that of the younger Fellows) is still rich in boundless possibilities.

(Reference was made to the work of George Granville Bantock, Henry J. Garrigues, Paul Segond, and Sir William Japp Sinclair, Honorary Fellows of the Society ; Arthur Bentley and James Chalmers Cameron, Corresponding Fellows ; and David Menzies, Thomas Proudfoot, David George Davidson, John Macmillan, A. Minto Macdonald, and John Linton, Ordinary Fellows.)

In an address of this kind I cannot but add one word in reference to that great and notable Seventeenth International Medical Congress which met in London in August last, and which I venture to think will stand out as one of the most remarkable medical meetings which have ever assembled, both in the importance of its work and in the influence and stimulus for good it will undoubtedly exert among all the nations of the world. Never before has the medical profession demonstrated its wonderful power and possibilities in such a striking manner, and this year will be a memorable one, if only for the

extraordinary success of the London meeting and its far-reaching potentialities and results, scientifically and socially, for the good of mankind.

In this world, where familiarity and mystery are so strangely entwined (and nowhere more than in the domain of obstetrics), we are still groping in semi-darkness.

We *do* know what the Hebrew Prophet thought no man would *ever* know, "how the bones do grow in the womb of her that is with child," but children are still what they were in the time of the prophet and life is still a mystery. Will it ever remain such?

Some of you will remember the well-known old Dutch picture showing a mother coming with her daughter to a physician, who is investigating a flask of the daughter's urine for the presence of "Kiestine," so as to determine the question of pregnancy. It has provoked many a smile in modern days. But lo! Abderhalden has appeared among us with his "Ninhydrin," by which he claims to diagnose or negative the existence of pregnancy biologically, without reference to the ordinary physical signs or subjective phenomena. If further experience should confirm his observations the diagnosis of pregnancy can be reduced to an exact science, which will be an enormous stride, and will at once remove all dubiety and often great anxiety from the minds of doctor and patient alike.

I must, however, now bring my remarks to a conclusion, and I cannot more suitably do so than by a quotation from our new Poet Laureate—the first medical man who has ever adorned this high position—who so beautifully and aptly interprets the position of things medical at the present time:—

> "And yet in all mankind's disappointed history, now first
> Have his scouts push'd surely within his foul enemies' lines,
> And his sharpshooters descried their insidious foe,
> Those swarming parasites, that barely within the detection
> Of manifold searchlight, have bred, swimming unsuspected
> Thro' man's brains and limbs, slaying with loathly pollution
> His beauty's children, his sweet scions of affection,
> In fev'rous torment and tears, his home desolating
> Of their fair innocence, breaking his proud passionate heart,
> And his kindly belief in God's good justice arraigning.
> . . . . . .
> Grant us an hundred years, and man shall hold in abeyance
> These foul distempers, and with this world's benefactors
> Shall Pasteur obtain the reward of saintly devotion,
> His Crown heroic, who fought not destiny in vain."

And again, in more general terms:—

> "O youth whose hope is high,
> Who dost to Truth aspire,
> Whether thou live or die,
> O look not back nor tire.
> . . . .
> "If thou can'st Death defy,
> If thy Faith is entire,
> Press onward, for thine eye
> Shall see thy heart's desire."

And so I bid you farewell, not, I trust, as an individual, but as your President, and I confidently hand over my duties and privileges to my successor, my teacher and friend, Professor Sir Halliday Croom, who, in your name as well as in my own, I cordially welcome to the chair, which he has already on previous occasions so worthily filled and adorned.

REFERENCES.—J. W. Ballantyne, "Inaugural Address on the Future of Obstetrics," 14th November 1906, *Trans. Edin. Obstet. Soc.*, vol. xxxii.; Professor Whitridge Williams, "Medical Education and the Midwife Problem in the United States," *Journ. Amer. Med. Assoc.*, 6th January 1912, vol. lviii.; Victor Bonney, "The Necessity of Recognising Midwifery as a Branch of Surgery," *Brit. Med. Journ.*, 15th March 1913, p. 552.

Dr. A. A. Morrison read a paper on "*Cloacal Vesical Exstrophy in the Female*," based on a case, the ninth child in the family, which died three days after birth. The extroverted area was triangular in shape, the apex of the triangle being below the attachment of the cord. The centre of the area projected and terminated in a proboscis-like structure, at the end of which was an opening through which meconium passed. On the lower part of the area there was an evagination surface depression near a slit-like orifice, which was found later to communicate with the large intestine. The opening through which urine escaped was to the right of and behind this eminence. On opening the abdomen the intestine was found attached by a thin mesentery to the posterior abdominal wall, and to pass mesially into the true pelvis. It opened at the elevation in the centre of the extroverted area. The large intestine was represented by a small oval body lying in the pelvic cavity, and was attached to the evagination surface referred to. The vagina was double, the two canals being united in their lower half. The right vagina was the larger, and was connected with a partially developed uterus with a normal broad ligament, Fallopian tube, and ovary. The left vagina had a very rudimentary uterus, but the broad ligament, Fallopian tube, and ovary were normal. The right vagina opened on the extroverted area by a small opening. The right kidney lay in the pelvic brim, and the ureter opened on the extroverted surface. The left kidney was in its normal position. This ureter was greatly dilated, and ended at the level of the left vagina. The pubic symphysis was absent, and the iliac and pubic bones were widely separated anteriorly.

Edinburgh Medico-Chirurgical Society.

A JOINT meeting with the Edinburgh Obstetrical Society was held in the Royal Victoria Dispensary on 29th October, Mr. J. M. Cotterill, President, in the chair.

Major Leonard Darwin, President of the Eugenics Education Society, gave an address on "*The Need for Eugenic Reform*." He said that the general acceptation of the principle of evolution had constituted a revolution in thought. Every revolution in thought demanded a change in policy and customs, and it was the aim of the eugenist to hasten and guide the legislative reforms which must follow the acceptance of the principle of evolution. Without relaxing efforts to improve the mental and physical surroundings of man they should endeavour to ensure that their descendants should actually enter the world with a better natural equipment than that which they possessed wherewith to fight the battle of life. They believed that all the good and useful inborn

qualities of man, as well as his evil tendencies, had been evolved in accordance with laws of nature; and they believed that, by studying these laws and utilising the processes thus discovered, they might ensure that the man of the future would be a nobler being than the man of to-day.

Eugenists were not yet in a position to formulate a policy with great precision. They saw, however, that the selection of the ancestry of coming generations was one of nature's methods of ensuring national advancement.

The "racial poisons," alcohol, lead, syphilis, etc., had to be considered. The evil effects of alcohol on the drinker and his family were unquestionable, but how the distant descendants might be affected was unknown. Enough, however, was known to justify a campaign against alcohol and disease. Their efforts could not be confined to purely environmental reforms. Heredity was the key which led to the advance of mankind.

The aim of the eugenist was to decrease the multiplication of that part of the population who were below the average in civic worth, and to increase the multiplication of those above the average. Research was required before they could ascertain the best method of attaining this.

Among practicable methods for encouraging increase among the more capable classes was a variation of income tax according to the size of the family. Death-duties might be treated in the same spirit. The pay of State employees might depend in part on the number of their children. Segregation of the unfit was now a matter of practical politics since the passing of the Mental Deficiency Bill. Their main object was to sow broadcast a deep sense of their obligations to posterity.

If it were realised what a burden was laid on the community by vast numbers of degenerates in their midst the need of reform would be shown. Increased taxation, often hidden in the form of increased rents, lowered wages, increased prices, etc., was a penalty they were now paying for the carelessness of their ancestors in regard to the purity of the race.

On the motion of Mr. Cotterill, seconded by Dr. Haig Ferguson, a hearty vote of thanks was accorded to Major Darwin.

Sir Thomas Clouston said that he was thoroughly in sympathy with what Major Darwin had said. They had no possible hope of checking the increase in a large class of mental defectives except through eugenics.

Professor Cossar Ewart remarked that the time would arrive when extravagance must come to an end. Hitherto they had been extravagant with their people, and had not done much to encourage the fit.

Dr. Clarkson doubted many of the statements as to results which would follow a given mating. There were bad results from sterilisation. The progeny of defectives might be healthy, and many mental defectives were so as the result of accidental injury at birth. Segregation had the disadvantage that it could not ensure the environment that a human being was entitled to.

Dr. Berry Hart said the great difficulty in eugenic reform was our ignorance. What laws determined marriage, and why did the marriage of suitable parents often fail to produce good progeny? Sterilisation of the unfit was a particularly difficult subject. Who was to determine the unfitness? It would be a misfortune if it were determined by a majority, since there were more fools than wise persons in the world.

A provisional committee, with Sir Thomas Clouston as convener, was then appointed to consider the formation of a branch of the Eugenics Society in Edinburgh.

A MEETING was held on 5th November 1913, Mr. J. M. Cotterill in the chair.

Dr. John Playfair was appointed President of the Society, and Mr. Scot Skirving and Dr. Edwin Bramwell were appointed secretaries.

Dr. Ninian Bruce gave an account of "*The Suprarenal Glands: Their Comparative Anatomy, Physiology, Pathology, and Relation to Clinical Medicine.*"

After dealing with the physiology of the glands and the action of adrenalin Dr. Bruce suggested that many of the phenomena of disease might be attributed to suprarenal exhaustion.

Cardiac failure in diphtheria might be so explained. The prolonged convalescence of typhoid and the lassitude which often followed influenza might be due to some degree of suprarenal exhaustion.

Sudden death after operation for exophthalmic goitre might be due to a simultaneous involvement of the suprarenals, and the presence of pigmentation and low blood-pressure might be noted.

If suprarenal exhaustion were suspected timeous rest might prevent it reaching a serious degree. The difficulty in giving suprarenal was the rate at which it was used up in the body.

Dr. Byrom Bramwell said that in Addison's disease he always laid more stress on the asthenia than on the pigmentation. He had had disappointing results in giving adrenalin in Addison's disease, but probably the serious nature of the lesion was an important factor. He thought that not much importance should be attached to the suggestion that diphtheria toxæmia was to be accounted for by deficient adrenalin. The cardiac muscle and nerves in diphtheria showed gross degenerative lesions. Nor did he think that they were justified in attributing pigmentation in exophthalmic goitre to suprarenal disease.

Professor Caird said that there were two difficulties in applying Dr. Bruce's suggestions to surgical practice. One was how to know when a patient was suffering from suprarenal inadequacy, and the other was the failure of post-mortem evidence, due to the evanescence of the chromatin reaction after death.

Dr. Ker said he had never seen anything that would keep a failing heart going in diphtheria toxæmia. Adrenalin had been well tried, and was not a success.

Forfarshire Medical Association.

THE Inaugural Address for session 1913-14 was delivered by Mr. J. Thomson Walker, London, on 24th October. Dr. Aymer, Bervie, occupied the chair. The subject of the address was "*The Diagnosis and Treatment of Tuberculous Nephritis.*"

Mr. Thomson Walker stated that the pathology of the disease had not been satisfactorily described, since such statements as had been made were founded upon the results of the post-mortem room. There it is seen practically only as a bilateral disease, and the statistics furnished by the morbid anatomist give little hope of successful treatment. However, from the results of catheterisation of the ureters and of operations performed in an early stage of the disease, the affection is shown to be primarily unilateral. Over 90 per cent. of cases were thus shown to be unilateral, and Mr. Walker's own figures showed that 99 per cent. of his cases were unilateral. The primary focus of the disease is to be found in the bronchial and mediastinal glands in the majority

of cases, and there may be evidences of old pleurisy, some affection of the lungs, some disease of the vertebræ, or the long bones, or of joints, or some scars of tuberculous glands. It is to be noted, too, that the primary focus is as a rule not active when the case comes under observation, and thus there is not much fear of infection of the second kidney. There are three possible methods of infection of the second kidney, namely, from the original source of the disease, from the bladder which is infected from the first kidney, from the blood or lymphatics from the first kidney. Now if the diseased kidney be removed it is found that there is tuberculosis of the second kidney in not more than 10·5 per cent. of cases within ten years of the operation, and in not more than 2 per cent. of cases after the expiry of that period.

As for the type of tubercle, miliary tuberculosis can be disregarded. The form that demands consideration is the ulcero-cavernous type. The disease commences at the apex of a pyramid, and gradually spreads outwards, destroying the pyramid in its progress. In the cortex there is seen a condition resembling miliary tuberculosis, but this corresponds to the pyramid affected. Nature attempts to stop the process. The calyx becomes closed off from the rest of the organ, and a thickened cartilage-like mass is formed which shuts off the affected part. The diseased portion becomes a tuberculous hydronephrosis. Sometimes the process is so widespread that the thickening takes place only at the outlet, and there is then a total hydronephrosis. In a case of complete shutting-off there is no sign in the urine of the presence of tuberculosis of the kidney. Now, can Nature unaided cure tuberculosis of the kidney? It cannot, except to a certain extent. After a year or so of quiescence some accident or other will restart the process.

In regard to diagnosis of the condition the cases fall into certain groups. There is the cystitis-type, in which there is frequency of micturition, with urgency and pain and with occasional hæmaturia. The condition is better in summer and worse in winter. The urine is of low specific gravity, and is full of white dots. Cultures are negative. These cases are often missed. It may be taken as a guide that any slight persistent cystitis in a young adult is suggestive of tuberculosis of the kidney, and more especially if bacteriological examination by cultures has proved negative. There is also the hæmaturia-type, which may occur in a young adult or an older person. No cause can be discovered for the hæmaturia. Possibly there is a little frequency and urgency, with sometimes a colicky pain, but that is all.

Before treatment can be begun several questions have to be settled. Is the tuberculosis active elsewhere in the body? Is the renal condition secondary to tuberculosis of the bladder or elsewhere in the urinary tract? Is there a second kidney, and if so, is it normal? These questions are settled by cystoscopy and by catheterisation of the ureters. If only one kidney is affected a few tubercles may be seen in the bladder, near the orifice of the corresponding ureter, or a few bullæ may be seen near it. As a rule a kidney may be said to be healthy if no such signs are seen in the bladder: yet in a certain number of cases one does find early tuberculosis of the kidney when none can be seen by looking at the lower end of the ureter. Whenever unilateral tuberculous disease of the kidney is diagnosed perform nephrectomy. We have no clinical means of telling when the second kidney is going to be infected. Nephrectomy cannot be performed in all cases. Some surgeons say that if both are affected remove the more diseased kidney, for it secretes more tuberculo-toxin than the other. There

is, however, a more urgent danger than this, and that is anuria. If you remove the first kidney you are removing some kidney tissue which may be available for secretion. In tuberculous lesions of the bladder it is quite safe to remove the kidney whatever the state of the bladder may be. Indeed the tuberculosis of the bladder seems to be kept up by the passing down of tubercle bacilli. In such a case treatment with tuberculin should be carried out. If phthisis is present the more urgent and severe condition is in the lung, and nephrectomy had better not be done. In active bone disease caution is required, while in long-standing tuberculous disease the operation should be gone on with. In debilitated patients a nephrotomy should be performed first, and later a nephrectomy. The nephrotomy only relieves the absorption of toxins, but not the disease itself.

The danger in the performance of the operation of nephrectomy lies in the infection of the wound with tubercle. The kidney should be removed *unopened*, even though the surface looks healthy. If the wound is infected there is a long convalescence, the production of a sinus and of a scar which breaks down.

The non-operative palliative treatment consists in sending the patient away from the cold east-windy days of this country to an even, warm temperature such as is found in Egypt, Morocco, and Madeira. No urinary antiseptic will affect the growth of tubercle bacilli. Such substances as urotropin seem to cause irritation. With oil of sandalwood the patient usually feels much better. The bladder should not be washed out, owing to the risk of a mixed infection. The injection of gradually increasing doses of tuberculin also alleviates the symptoms, and in a certain number of cases the pus and tubercle bacilli disappear from the urine, but there is the ever-present danger of recrudescence of the disease. When a patient refuses nephrectomy treat him with tuberculin. In a case of bilateral tuberculosis treat with tuberculin, but do it cautiously, for you may succeed in shutting off the whole kidney and produce anuria. Tuberculin should be employed after the operation when the bladder is affected, and before the operation to clear up a cystitis so as to permit of examination with the cystoscope.

The immediate risk of the operation is very small. In 1885 the mortality was 90 per cent., in 1896 it was 18 per cent., in 1908 it was 7·18 per cent. In Mr. Thomson Walker's series of 45 cases there was no death. One died, however, three months after operation, of tuberculous meningitis. To the patient one can now say that the immediate risk to life is, 2·18 per cent. of the patients die ; the risk in the first two years after nephrectomy is, 10·6 per cent die, and after these two years 3·2 per cent. die.

The address was illustrated by paintings of kidneys, by specimens from Mr. Thomson Walker's collection, and by histories of cases on whom he had operated.

A MEETING of the Association was held on 6th November in the Conjoint School of Medicine, Dundee. Dr. C. S. Young, Dundee, occupied the chair.

Mr. Mathers showed a case of *Syphilitic Glossitis*, with peribronchitis of the arytenoid.

Dr. R. C. Buist gave a demonstration of gynecological specimens.

Mr. Greig read a paper on a case of "*Congenital Kyphosis.*"

Dr. Pirie read a paper on "*Some Morbid Conditions of the Stomach, as Shown*

by X-Rays." It was illustrated by lantern-slides of hour-glass stomach, gastric ulcer, malignant ulcer, etc.

Dr. J. Mackie Whyte sent a paper entitled, "*Notes on a Case of Lympho-Sarcoma of the Lung.*" It was the case of a plumber who had been admitted to hospital in July 1913. He was 34 years old, and complained of sharp pain in the left side, with paroxysmal cough. His temperature varied much. On admission it was 103°. At times it was high, but as a rule it was 98° to 99°. The left lung was throughout dull, but the right lung was normal. Heart showed slight displacement to the left. Exploratory puncture showed only a drop or two of blood. On 10th September paralysis of the left vocal cord was noted, and there was much dyspnœa. Enlarged glands were evident above the left clavicle. At the autopsy there were found numerous tumour masses on the left lung. They showed a tendency to suppuration. The liver had metastatic tumours. Section showed that the tumour was lympho-sarcoma.

Dr. Kerr, who read the paper, described a similar case that had occurred in his own experience. Mr. Greig spoke of the difficulty of distinguishing such a case from lymphadenoma. Dr. G. Whyte described two cases that he had had under observation.

RECENT ADVANCES IN MEDICAL SCIENCE.

NEUROLOGY.

UNDER THE CHARGE OF

EDWIN BRAMWELL, M.B.

The Micro-Organism Causing Epidemic Poliomyelitis.

Flexner and Noguchi (*Journ. of Exper. Med.*, October 1913) have succeeded in cultivating a micro-organism which would appear to be etiologically related to epidemic poliomyelitis as it occurs in human beings and monkeys. Attempts to demonstrate the micro-organism of epidemic poliomyelitis have hitherto proved unsuccessful. The claims made for the micrococcus cultivated by Giersvold from the cerebro-spinal fluid, and for the bacillus described by Dixon, Fox, and Rucker in the circulating blood of patients affected with acute poliomyelitis, were finally disposed of when it was demonstrated by Flexner and Lewis, and independently by Landsteiner and Levaditi, that the causative agent was filterable. This observation, made in 1909, discouraged further attempts at cultivation. The authors have succeeded, however, where others have failed, by applying the new method devised by Noguchi, by means of which he has successfully cultivated spirochætæ.

The method of cultivation and the appearances presented by the cultures are described in detail and figured. Fresh specimens derived from human beings and from monkeys experimentally inoculated, and glycerinated specimens from both sources, were employed. The culture

medium consisted essentially of human ascitic fluid, and in obtaining the initial culture the exclusion of oxygen is necessary. The numerical results of cultivation are summarised as follows:—"In a series of thirty-three experiments with the nervous tissue of monkeys, comprising thirteen specimens of brain tissue, two of brain emulsion, and eighteen filtrates of brain and spinal cord from twenty-four animals infected from two different strains of human poliomyelitic virus, an initial growth was obtained in nineteen instances, of which sixteen proved to be pure and three mixed cultures. Of these, pure subcultures were obtained thirteen times—namely, eight times from brain tissues, four times from filtrates, and only once from emulsion. In a second series, in which human nervous tissues were directly employed, eight successful cultivations were secured; one was from fresh tissue, three were from recently glycerinated tissues, and four from tissues which had been glycerinated for many months. In two specimens of the last four initial cultures but no subcultures were obtained. In all the others subcultures resulted, and were maintained for an indefinite period." The organisms when viewed under the dark-field microscope in fluid cultures appear as minute bodies, globular in form, hanging together in short chains, pairs, and small masses. They are devoid of independent motility, and distinguishable with difficulty among the indefinite granules present. The two methods of staining which have proved most satisfactory so far are those of Giemsa and Gram. Inoculation of the cultures was followed by the clinical and pathological effects characteristic of experimental poliomyelitis in the monkey, and it was further found that the central nervous system of the monkeys in question could be employed both for recultivation of the micro-organisms inoculated and for transmitting the experimental affection to still other, and probably an indefinite series of, monkeys. Further, the micro-organism can be detected by means of a special staining method devised by Noguchi, and which is described in detail in the present paper, both in film preparations and in sections prepared from the central nervous system of human beings who have succumbed to poliomyelitis and in the central nervous system of monkeys in which poliomyelitis has been experimentally produced. Thus the organism was demonstrated in the films in eighteen out of nineteen specimens of glycerinated human nervous tissues, either in pairs or in small aggregated groups between the cells, and in sôme instances within the cytoplasm of the cells. Although they point out that the cultural conditions are those that apply more particularly to the bacteria, the authors remark that they venture no statement as to the place among living things to which the bodies they have observed belong. Again, while believing that an etiological relationship has been shown to exist between the cultivated micro-organisms and epidemic poliomyelitis, they admit as a possibility that two factors may be present—the one

an invisible, because ultra-microscopic, organism, the other the globoid bodies which they describe.

The Cerebro-spinal Fluid in Acute Poliomyelitis.

The diagnosis of acute poliomyelitis is seldom possible with any degree of certainty before the appearance of the resultant paralysis. Early recognition is of importance at the present time if only from the standpoint of prophylaxis. It is conceivable, one might almost say probable, that in the future some effective means of preventing or combating the disease may be discovered. Should this be so, early diagnosis in the preparalytic period may come to be a matter of vital moment.

Francis R. Fraser (*Journ. of Exper. Med.*, July 1913) has studied the cerebro-spinal fluid in fifty-seven cases of acute epidemic poliomyelitis admitted to the hospital of the Rockefeller Institute during the summer of 1912. He includes the results of examination of sixty-nine cases from the same Institution in which the condition of the cerebro-spinal fluid was reported on last year by Draper and Peabody (*Amer. Journ. Dis. Child*, 1912, vol. iii. p. 153). Among these 126 cases 362 examinations were made, the period extending from the preparalytic stage to the twelfth week after onset. The purpose of the study was to ascertain whether the examination of the spinal fluid may be of aid in early diagnosis, and whether the abnormalities present have any relation to the severity of the disease, the localisation of the paralysis, and the prognosis. Special attention was paid to the macroscopic appearance of the fluid, the number and type of cells present, the presence of globulin, and the power of reducing Fehling's solution. The technique for the cell estimation was as follows:—The fluid was mixed with acetic acid in a hæmocytometer pipette for white blood corpuscles. Fifty per cent. acetic acid was drawn up to the "1" mark on the stem, and the pipette was then filled with the spinal fluid. After a thorough shaking two counting chambers were filled immediately and counts were made, cell counts of over ten cells to the cubic millimetre being considered as abnormal. The globulin was estimated by the butyric acid method of Noguchi. The reaction with Fehling's solution was tested by boiling one cubic centimetre with Fehling's solution and allowing the mixture to stand for ten or fifteen minutes. Of the fluids from the eighty-four cases examined in the first week seventy-eight, or ninety-three per cent., showed cell counts of over ten per cubic millimetre (in fifty the number of cells in the spinal fluid was fifty or more per cubic millimetre), and forty-one, or forty-nine per cent., showed a globulin reaction of slightly plus or over. Of the fluids from seventy-nine cases examined in the second week, fifty-one, or sixty-five per cent., showed abnormal cell counts, and fifty-four, or sixty-eight per cent., showed abnormal globulin reactions. It is interesting to note

that in one of the cases seen on the seventh day of the disease and the third of the paralysis the spinal fluid contained but seven cells per cubic millimetre, and gave a + globulin reaction. The patient died a few hours later. In another case classed among the abortive cases the spinal fluid was never abnormal. In another the cell count was never abnormal, but a + + globulin reaction was present. Again, in one abortive case, seen on the second day of the disease, the number of cells in the spinal fluid was not increased, but on the following day the fluid contained sixty-two cells per cubic millimetre. With regard to the type of cells met with, it was found that the cell increase was almost always due to mononuclear cells. Polymorphonuclear cells were usually absent, but were present in all the fluids obtained on the second day of the disease, and in eighty per cent. of those obtained on the third day. The average differential count of these cells was thirty-four per cent. on the second day and six per cent. on the third. Degenerating cells were present in some fluids to the extent of twenty to thirty per cent., while a few plasma cells could also be identified in some of the fluids. In four cases seen in the preparalytic stage, the cells numbered from thirty-seven to eight hundred and eighty per cubic millimetre, while of six abortive cases five showed a cell count of thirty-four to eighty-nine. All the fluids reduced Fehling. The author concludes from his observations that the examination of the spinal fluid may be of value in diagnosis in the preparalytic cases and in abortive cases, but that it is not of value for prognosis as to life or ultimate recovery.

Salvarsan Therapy.

Nonne (*Syphilis of the Nervous System*, 2nd ed., p. 376) discusses the indications and contra-indications for the administration of salvarsan in syphilitic nervous diseases. The danger may now be said to be slight, provided a proper technique and proper dose are employed. The intravenous is far more often employed than the intramuscular method, the advantages of the former being (1) exactness in dosage, (2) absence of pain, (3) quicker distribution of the remedy throughout the entire system, and (4) the certainty of obtaining an effect from the entire dose. No dangers attend the intravenous administration of salvarsan if (1) the remedy is injected in either an alkaline or neutral solution, (2) if careful asepsis or antisepsis is observed, (3) if care is taken to prevent the entrance of air-bubbles into the veins, and (4) if it is not given in severe cases of arteriosclerosis, extensive nerve degenerations, advanced cases of diabetes, and in general marked cachexies such as exist in tuberculosis and carcinoma. In Nonne's experience the danger said to exist in aneurysm and myocardial degeneration has been over-estimated. Salvarsan is, it has been affirmed, injurious to the nervous system. Ehrlich maintained that it was harmless to a healthy nervous system, but was opposed to its

use in advanced nervous degenerations on account of experiences with atoxyl. There was at first some hesitancy in employing salvarsan, which is also an arsenical preparation, on account of its possible harmful effect on the optic nerve. It has, however, been determined that salvarsan is not injurious when the optic nerve is intact, and also that non-specific disease of the optic nerve appears to progress no faster after the administration of salvarsan than before. Disease of the auditory and facial nerves seems, however, to be more frequent than it was prior to the introduction of salvarsan. The circumstance, however, that the so-called nerve recurrences disappear as a rule under salvarsan and mercurial therapy, indicates that they are due to cerebral syphilis. Some of these so-called recurrences may probably be explained by the circumstance that these symptoms have been more carefully looked for since their occurrence in the course of salvarsan therapy was first noted. It must, however, be admitted in Nonne's opinion that salvarsan is able to render spirochæte foci mobile or active which otherwise perhaps might have remained latent. In summarising the influence of salvarsan in syphilogenetic diseases Nonne says: "The innumerable reports concerning the effect of salvarsan in the last four years permit us to say that these specific syphilitic affections are very favourably and speedily influenced, but that tabes and paresis show no material change in their clinical course." With regard to tabes Nonne holds that salvarsan may in general be given in those cases where mercury is indicated, but that it has not been proved that it is of any more value than mercury in this disease. Again, he believes that salvarsan is permissible in incipient cases of general paralysis: "There are no cases reported, however, in which the improvement has been more marked than many experienced practitioners have seen before the salvarsan era." Nonne is at present employing salvarsan injections in combination with mercurial inunctions and calomel injections, administering as much as 5 grammes of salvarsan in a period of from five to eight weeks, as advocated by Dreyfuss. Thus far, however, he has formed no conclusions as to the efficacy of this as compared with other methods of administration. E. B.

SURGERY.

UNDER THE CHARGE OF

J. W. STRUTHERS, F.R.C.S., AND D. P. D. WILKIE, F.R.C.S.

Clinical Observations in Essential Hematuria.

Braasch (*Journ. Amer. Med. Assoc.*, 20th September 1913) reports the conclusions arrived at from a study of 77 cases of "essential hæmaturia," by which he means cases of hæmaturia in which there is neither clinical evidence of renal insufficiency, visible change in the renal

parenchyma, nor any evidence of renal infection. The 77 cases were all observed in the Mayo clinic, and appear to make the largest series ever reported from one institution. Twenty-six of them were submitted to operative treatment, the remainder being treated by conservative measures. Fifty-eight of the patients were males, 19 females. The majority of the cases occurred between the ages of 40 and 50, only 6 occurring below 30. In 51 cases the condition was localised on the right side, in 21 on the left. Pain was very rarely present, and was only trifling in character. The bleeding had been noted for periods varying from 1 to 15 years when the patients came under observation. As regards diagnosis it was found that confusion most often arose in cases of chronic nephritis, infective nephritis, pyelitis, neoplasm, tuberculosis, and lithiasis. As essential hæmaturia is often said to be due to chronic nephritis, it is interesting to note that Braasch maintains that the bleeding in cases of essential hæmaturia is sharply defined from that of nephritis. In the latter, bleeding is less copious, and varies more from day to day. Scanty urine, the presence of casts, œdema, headache, and other features of nephritis are all absent in essential hæmaturia, and bleeding in nephritis is usually a terminal symptom in the disease. The other lesions named as giving rise to difficulty in diagnosis are all distinguishable from essential hæmaturia by the careful examination of the urine for organisms, pus, etc., and by the use of the X-rays.

Braasch has examined 11 specimens of kidneys removed for hæmaturia in order to check the observations of those who report areas of varying extent showing nephritic changes, in their specimens, and which they regard as explaining the bleeding. He found that none of his specimens showed the marked changes associated with clinically evident chronic nephritis. On the other hand, routine examination of a large number of kidneys showed the slight changes noted in cases of essential hæmaturia to be extremely common in cases where there had been no bleeding and no nephritis clinically. There must therefore be some factor present, in addition to patches of slight interstitial change, to account for the hæmorrhage. Additional evidence against the nephritis theory is afforded by the fact that the patients who have survived for years after the bleeding stopped have not developed nephritis, so that a real association between essential hæmaturia and nephritis cannot be established. Braasch adopts a sceptical attitude towards the view that bleeding may come from varicose veins at the tips of the papillae, holding that no valid evidence of such a condition has been produced. He has no positive suggestion to make regarding the etiology of the condition. Of the 77 cases seen, 26 were operated on. Twelve of these were treated by nephrotomy, with cure in 8 cases. In 3 cases hæmorrhage persisted to such a degree that nephrectomy had to be done for its arrest, while in the 4th case occasional hæmaturia

occurred, though in diminished degree, after nephrotomy. Nephrotomy is therefore not a certain method of cure. It is to be recommended as the first operative method to employ when more conservative measures fail. All the cases in which nephrectomy was done made an immediate recovery, and 14 heard of later were well.

Of 51 cases not operated on, 44 were traced. In 26 of these the affected kidney had merely been catheterised, with subsequent arrest of hæmorrhage in all but 4 cases. In 18 cases the kidney pelvis had been distended with collargol or methylene blue, with arrest of bleeding in all but 3 cases. The injection of adrenalin was tried, but gave poor results The general conclusion reached is that essential hæmaturia should as a rule be treated by conservative, non-operative measures. Only when the bleeding is severe enough to incapacitate the patient or to raise suspicion of a neoplasm need operative measures be undertaken.

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Röntgenographic Study of the Normal Kidney, its Pelvis and Ureter.

Childs and Spitzer (*Journ. Amer. Med. Assoc.*, No. 12, vol. lxi.) have investigated the X-ray picture presented by the normal kidney pelvis and ureter, after the injection of collargol solution varying in strength from 8 to 20 per cent., according to the stoutness of the patient, in ten cases. Every precaution was taken to see that the subjects were normal. The collargol was allowed to flow in by gravity from a height of 2 feet through a ureteral catheter passed in as far as it would go. As soon as pain was felt the injection was stopped and a radiograph taken at once. The following are the more important conclusions arrived at as the result of their observations. (1) Pyelography is not only justifiable, but is a necessary diagnostic measure. (2) The lower border of the kidney pelvis is normally concave. (3) The normal pelvis does not hold more than 15 c.c., and one that holds more than this should be regarded with suspicion, as probably abnormally dilated. (4) Movement of the kidney of from 1 to 3½ cm. in addition to the usual respiratory excursion, is not abnormal. (5) Angulations, curves, and kinks of the ureter are found in normal persons. (6) Stereoscopic plates are absolutely necessary for the correct interpretation of pictures presented by radiography. (7) Pain, shock, and subsequent fever are caused by rapid distention of the pelvis rather than by any special drug used, and are unavoidable if the pelvis is completely filled for radiography, although none of them need be produced to an extreme degree if proper care is used. (8) Owing to the considerable variations in the size and curves of the normal ureter, and the variations produced by peristalsis, great care is necessary in interpreting the radiographic pictures.

The Intensification of the Local Action of Novocain by Potassium Sulphate.

Braun (*Zentralbl. f. Chir.*, No. 39, 1913) has made a number of experimental and clinical observations to test the value of adding potassium sulphate to novocain solutions for subcutaneous injection, as recommended by Kochmann and Hoffmann. He ascertained by tests on himself that injection of a 4 per cent. solution of potassium sulphate produced no anæsthesia and no harmful effects. To a ·05 per cent. solution of novocain, which is too weak itself to produce anæsthesia, he added 0·4 per cent. potassium sulphate, and found that the mixture had a definite anæsthetic effect. He next tested a mixture of $\frac{1}{2}$ per cent. novocain with 0·4 per cent. potassium sulphate, and found that it effectively paralysed the digital nerves, which $\frac{1}{2}$ per cent. novocain alone will not do. Finally he tested the addition of the potassium sulphate solution to mixtures of novocain and adrenalin, and again found that their action was distinctly intensified. He is of opinion that the intensification of the anæsthesia is not marked enough to allow of a material weakening of the solutions in common use, but thinks it definite enough to make the addition of 0·4 per cent. potassium sulphate to the stock solutions worth while. He therefore recommends that instead of using normal saline, a solution of 7 parts sodium chloride, 4 parts potassium sulphate to 1000 parts water should be used for making up local anæsthetic solutions with novocain, with the invariable addition of adrenalin.

A Simple and Effective Dressing for Wounds.

As the result of a large experience during the recent war in the Balkans, Chrysopathes (*Zentralbl. f. Chir.*, No. 45, 1913) strongly recommends the use of liquid paraffin as a dressing for wounds. He used it in more than 600 cases of suppurating wounds which came under his care—a large number of them bedsores—and found that they healed with unusual rapidity. In a few cases of exceptionally dirty wounds he combined the paraffin with iodoform, in the strength of 2 to $2\frac{1}{2}$ parts of iodoform to 100 parts of paraffin. The paraffin was applied by saturating plain gauze with it, and laying the gauze on the wounds in the ordinary way.

Two and a Half Year's Experience with Salvarsan and Neo-Salvarsan.

Corlett (*Journ. Amer. Med. Assoc.*, 20th September 1913), reports his results after two and a half years' careful use of salvarsan and neo-salvarsan. He has treated during that time 220 patients, the majority of whom have had 3 or 4 injections, sometimes even more. He begins treatment with an intravenous injection of 0·6 grm. neo-salvarsan in

men and 0·5 grm. in women, dissolved in freshly distilled water or 0·4 per cent. saline solution. If this dose is well borne he gives a second injection at the end of a week of 0·9 grm. in men and 0·75 grm. in women, and repeats this dose at weekly intervals, two or three times. Thereafter he invariably gives a course of mercurial treatment, usually by injection of grey oil.

While in the great majority of cases the results of this treatment have been admirable, Corlett has had four cases where unpleasant results followed the administration, two of them of a serious nature, two relatively mild. The first patient developed a right-sided facial paresis, followed by intense frontal headache and marked interference with vision, 3 weeks after an injection of 0·6 grm. of salvarsan After a long illness he recovered under treatment by mercury.

The second case had two injections at a week's interval of neo-salvarsan, and after the second developed paroxysms of vomiting, rigors and muscular twitchings. Later he developed a general erythematous rash with herpes on the right cheek, paralysis of the left leg and bladder, and sensory paralysis below the waist, with bedsores. After an illness lasting many months he had greatly improved, but his complete recovery is not recorded. The other two patients had very sharp febrile reactions lasting some little time, and in one case jaundice developed. Both recovered completely.

Corlett has analysed the reported deaths up to November 1912 following the use of salvarsan and neo-salvarsan, and finds 124 on record. He estimates that this number may fairly be increased to 200 in estimating the actual deaths which have occurred, for many must have been withheld from publication. The amount of the drugs sold up to November 1912 is known, and Corlett reckons that there has been, roughly, one death to every 2000 injections. He classifies the accidents following the use of salvarsan as follows:—(1) Those coming on shortly after injection, with symptoms of an acute intoxication and post-mortem findings of serous meningitis, hæmorrhages, kidney and liver lesions such as are found in acute arsenic poisoning. (2) Those coming on in 2 to 4 days after injection, with nerve paralysis, deafness, dizziness, and sometimes loss of consciousness, the so-called Herxheimer reaction, ascribed to the loosening of toxic substances from dead spirochætes. (3) Those coming on several weeks or months after injection, with symptoms of nerve paralysis, due either to the exacerbation of a process already present or to the appearance of a new lesion. In order to avoid accidents Corlett advises that patients should be carefully examined for the presence of any physical condition likely to make them unduly sensitive, such as arteriosclerosis; that treatment should be begun with small doses, gradually increased at intervals of not less than a week, provided that the first dose is well borne; that extreme care should be taken to see that the distilled water used for

dissolving the drug are absolutely pure and sterile; and that cases with cephalic chancre should be treated with great caution, as they seem to be specially sensitive. J. W. S.

OBSTETRICS AND GYNECOLOGY.

UNDER THE CHARGE OF

A. H. F. BARBOUR, M.D., AND J. W. BALLANTYNE, M.D.

Intestinal Complications in Pregnancy and Labour.

During recent months several cases of intestinal complications in pregnancy and even in labour have been recorded in the medical journals. One wonders whether such cases never occurred in the past, for certainly records of them are almost wanting. It is most likely that they happened, but went unrecognised, or rather were ascribed to sepsis or to peritonitis of a septic or obscure type It is more than probable that some of the rapidly fatal cases of so-called puerperal fever in the early hours of the lying-in period were really instances of acute appendicitis or of intestinal occlusion from some other cause. It will, at any rate, be worth while to look at the records which have been recently published.

An interesting example of intestinal occlusion occurring during pregnancy and necessitating operation at the seventh month is put on record by Lévy-Klotz, Cunéo, and A. Pinard (*Ann. de gynéc. et d'obstét.*, 2nd ser., vol. x. pp. 372-376, 1913). The patient was twenty-one years of age, healthy, and regular as regards menstruation until her marriage, which took place in October of 1909. She did not menstruate in November, and she was seen by Dr. Lévy-Klotz in December, when the diagnosis of early pregnancy was made, and when also the presence of albumin in the urine was detected. The wholly-milk diet was recommended and strictly adhered to, but the quantity of albumin remained stationary, and in the following April the woman was seen by Professor Pinard, who recommended the continuance of the strict milk diet. The quantity of albumin, although small, remained till the seventh month, when dangerous symptoms appeared following upon the act of coitus performed on the night of 22nd-23rd May. There were sharp pains in the abdomen, accompanied by dysuria. Dr. Lévy-Klotz found signs of premature labour, and recommended rest in bed and opiates. On the following day labour pains seemed to be passing off, micturition was normal, and there was a natural motion of the bowels; but twenty-four hours later there was a complete change, pain in the abdomen (not of the nature of labour pains) being very great, the face being anxious, and the patient feeling sick. The abdomen was much distended and tympanitic, the uterus could not be easily felt, the pulse was about 100, and the temperature was 38·5° C. (about 101·5°). All these symptoms had come on with start

ling suddenness. Professor Pinard saw her in consultation, and his diagnosis oscillated between simple intestinal obstruction and appendicitis, with a slight preference for the latter. Abdominal section was recommended and accepted by the patient's friends; she was operated on the same night by Dr. Cunéo. An incision was made in the neighbourhood of the right iliac fossa, but the appendix was found to be healthy. The cæcum was greatly distended, and Dr. Cunéo tried as well as he was able (for the pregnant uterus was much in the way) to find the cause of the occlusion, and thought he could make out a tense band over which the sigmoid flexure formed a kink at the left side of the uterus. He contented himself with making a cæcal anus, not wishing to prolong the operative interference. At first the intestine remained paralytic and the artificial anus did not act, but under a thermo-electric application it was set agoing. Some three weeks later a spontaneous action of the bowels took place by the rectum, labour set in, a living but small infant was expelled, and along with the placenta came away an old clot of a large size. Two months later the mother was freed from her stercoral fistula, and at the time of writing was in good health, although a small quantity of albumin still remained in the urine.

The explanation of this case is far from clear, but Dr. Cunéo's suggestion that the infundibulo-pelvic ligament formed the band on the left side of the uterus and that the large intestine was kinked over it seems to be well supported. Dr. Lévy-Klotz's further suggestion is also worthy of credence, viz., that coitus caused a retro-placental hæmorrhage which produced over-distension of the lower part of the uterus and consequent pressure upon the loop of large intestine. In cases such as this it is obvious that medicinal means and even emptying of the uterus are useless: the only hope is in operation. In this instance the performance of the enterostomy was followed by the happiest results—relief of symptoms and the continuance of the pregnancy. The continuance of the gestation was ascribed chiefly to the giving of morphine hypodermically after the operation.

Several communications on the subject of intestinal occlusion in midwifery practice were read before the Société d'obstétrique et de gynécologie de Paris in March 1913 (*Ann. de gynéc. et d'obstét.*, 2nd ser., vol. x. pp. 377, 378, 379, 1913). Lepage reported two cases. In one of these the pregnancy was at about the fourth month, and there were the signs of intestinal occlusion in connection with generalised peritonitis. M. Quénu diagnosed appendicitis and did an appendicectomy followed by drainage, but the condition did not improve and the intestinal paralysis persisted, consequently ten days later enterostomy was performed. On the following day fæcal masses were passed by the artificial anus, and in five days abortion took place. Cure followed, and in three months the cæcal anus was closed by operation. Such

a case as this, of course, raises the question whether it is not better to empty the uterus first, and Lepage recalls an experience which he had in 1901. Pregnancy was at the sixth month. For three days there were signs of intestinal occlusion (extreme tympanitic distension, no passage of flatus or fæces, etc.); the uterus was emptied, and soon thereafter the bowel conditions were spontaneously corrected. There are really two groups of cases. There are those in which the pregnancy alone, with no intestinal or peritonitic conditions, is the cause of the occlusion, and for them (since the compression of the bowel is the most important factor) it would seem as if emptying of the uterus (therapeutic abortion) were indicated, especially as the life of the fœtus is generally gravely compromised already; and there are the other cases in which there have been signs of peritonitis, or in which operations for ectopic pregnancy or inflammation of the annexa have been performed, and in which, therefore, the gestation is not of the same predominating causal importance. In them abdominal section is indicated.

Somewhat different was the case reported by Mauclaire and Tissier (*loc. cit.*, pp. 378, 379). The patient was a primigravida at seven and a half months, her abdomen was greatly distended, she was vomiting greenish-black matter, no flatus or fæces had passed for 24 hours, the rectum was full of scybalous masses, and there was a very rapid pulse with no rise of temperature. Labour was in progress. The rectum was cleared out, abundant flatus came away, and then the child, a living female, was extracted with forceps. Nevertheless all the bad symptoms persisted, and so Mauclaire opened the abdomen by an exploratory median incision. He found the intestines somewhat distended and a little more vascular than usual; he put two drains in the pouch of Douglas and closed the abdomen. Both mother and child recovered and left the hospital well. Mauclaire and Tissier call the case one of pseudo-occlusion with the phenomena of "peritonism," but they are unable to suggest the real cause of the symptoms. Their experience, however, is of value as an illustration of the various clinical types which one may meet with when the intestine is involved in pregnancy.

Very different was the result of treatment in Lejars's patient (*loc. cit.*, pp. 379, 380). She was five and a half months pregnant, and was suffering from progressive intestinal obstruction which had been going on for eight days. The abdomen was greatly tympanitic, but some flatus was passing, and the pulse and facial appearance were not alarming. Later, however, the symptoms became more grave, and Lejars opened the abdomen by the median incision. He found the cæcum much distended, as was also the sigmoid flexure, and the cause was discovered in the uterus itself, which formed a complete barrier ("*un véritable barrage*") in the abdomen. It was retroverted,

and the fundus was fixed to the postero-lateral wall of the abdomen at the level of the sacral promontory. By stretching the adhesions Lejars was able to make out that they took origin in a fibroid tumour, the size of a chestnut, growing from the posterior surface of the fundus uteri. He enucleated the fibroid, set free the intestines, and did an enterostomy. On the following day the bowels moved frequently, and a dead fœtus was born: but the symptoms did not improve, and death occurred on the third day after the operation. Lejars thinks that the interference came too late, and that if the enterostomy had been done earlier the result would have been different.

Quite another sort of intestinal complication in pregnancy was put on record by Charles Guérin-Valmale and Charles Mattei at the "Réunion obstétricale et gynécologique de Montpellier" in June 1912 (*Arch. mens. d'obstét. et de gynéc.*, ann. ii. No. 6, p. 573, 1913). The patient was nineteen years of age and pregnant for the first time. During the eighth month symptoms of peritonitis came on, followed by labour and death in a state of grave infection on the fourth day of the puerperium. At the necropsy three perforations were found in the duodenum, and nine large ascarides lumbricoides in the peritoneal cavity: two other worms were in the stomach. The authors connect the symptoms and death with the presence of the parasites. At a later meeting of the same "Reunion" (in December 1912) Tédenat dealt with the subject of appendicectomy in pregnancy (*loc. cit., supra*), and pointed out that whilst pregnancy rarely caused appendicitis, labour very often gave to a pre-existing appendicitis a distinct stimulus ("*un sérieux coup de fouet*" is the expressive French term employed) which gravely affected the prognosis and raised the mortality to 52·3 per cent. Operative interference was, therefore, strongly indicated.

In connection with appendicitis in pregnancy reference may be made to the cases reported by Budd Van Sweringen (*Amer. Journ. Obstet.*, vol. lxvii. pp. 917-924, 1913). After alluding to Munde's case, which occurred in 1894, and to Baudler's and Palmer Findley's lists of appendicitis cases in pregnancy, Van Sweringen states that gestation is not an etiological factor save in those women who have had previous attacks, and the pathology is only changed by the presence of the enlarged uterus. Dangerous conditions may, however, result when an appendicitis accompanied by peritonitis develops in the second half of pregnancy and is followed by recovery, for when labour ensues, the contractions of the uterus may rupture an abscess and cause death from perforative peritonitis. An interesting case is described in which a woman at the sixth month of pregnancy was operated on and the appendix found to be gangrenous. It was removed, the wound was drained, and the gestation went on to full term, then, as fears were

entertained lest the adhesions should tear, and hæmorrhage into the peritoneum occur, the abdomen was opened with the advent of labour pains, the adhesions were tied and cut, and the child delivered by Cæsarean section. At a later time the patient had a normal delivery. In another case the abdomen was opened for appendicitis at the third month, the distended appendix was removed, and the pregnancy progressed.

Yet another type of intestinal complication has been recorded by Dr. Munro Kerr (*Trans. Glasgow Obstet. and Gynæc. Soc.*, vol. ix. p. 37, 1913). The patient was at the seventh month of pregnancy when she was admitted to hospital, suffering from fæcal vomiting and in a state of collapse. There was a large ventral hernia at the site of an old appendicectomy scar. An incision was made here, and a fibrous band was found, causing complete obstruction of the lumen of the bowel. This was removed and the bowel freed; the patient recovered, and her pregnancy was undisturbed.

It is evident, from what has been stated above, that intestinal complications play a real part in the pathology of pregnancy, and that prominent amongst them are appendicitis and ileus. The occlusion may be due to bands, to the pressure of a retroverted or otherwise displaced uterus, with or without a fibroid in it, or to a paralytic state following upon toxic conditions. Such cases are evidently not so rare as was at one time thought, and they are apt to make labour very dangerous even when they cause no trouble in pregnancy.

The writer of this abstract has met with three cases during the past two years in hospital practice. One was a rupture of the appendix during labour, followed by symptoms of intestinal occlusion and operation within twenty-four hours, with ultimate complete, but slow, recovery (*vide* report in *Journ. Obstet. and Gynæc. Brit. Empire*, vol. xviii. p. 331, 1910); another was an instance of rupture of a peri-appendiceal abscess in labour, followed by death in a few hours, before any operation could be performed. The third was quite peculiar. There was thrombosis of both femoral veins in pregnancy; labour was induced at the seventh month; before, however, the child was born, symptoms of acute ileus developed, the abdomen was opened, Cæsarean section and hysterectomy were performed. It was then found that there was thrombosis of the veins of a large segment of the large intestine, with paralysis, an infarct in a part of the bowel wall, and a small perforation. The patient died before the operation could be completed. The outstanding lesson to be learned from all these cases is that early operation, preferably in pregnancy, gives almost the only chance, for the onset of labour pains at once darkens the prognostic outlook.

J. W. B.

OPHTHALMOLOGY.

UNDER THE CHARGE OF

W. G. SYM, F.R.C.S., AND ANGUS MacGILLIVRAY, M.D.

The Bacterial Flora of the Conjunctival Sac in Domestic Animals.

Our points of contact with the lower but domesticated animals are so numerous and sometimes so intimate that we cannot afford to neglect the existence in them of such forms of eye disease as occur, and more particularly the prevalence of bacterial and contagious forms. Among those who are specially liable to infection are grooms, shepherds, slaughterers, and farm labourers. Ruata of Palermo has recently (*Archivio di Ottalmologia*, vol. xix. p. 8) made careful investigation, in regard to a number of animals, of the flora of the conjunctival sac. This interesting and important work has also been done previously, notably by Tschirkowsky and Krüger. The former devoted his attention chiefly to rabbits, in whose conjunctival sacs he found the staphylococcus albus and various Gram-positive micrococci, streptococci, various forms of sarcina, and—less frequently—the xerosis bacillus. He also made observations to discover whether other organisms could be implanted, and established that panophthalmitis could be produced in 48 hours by inoculation with the bacillus perfringens. Krüger's material, on the other hand, consisted for the most part of healthy horses. The chief organisms he met with were staphylococcus, streptococcus pyogenes aureus (?), bacterium coli (?), but most frequent of all was the pneumococcus. The last named was found to be the most usual cause of catarrhal conjunctivitis, though staphylococci and streptococci seemed to be sources of danger also. In his own work Ruata, in order to verify the observations of those others, took as much pains to eliminate sources of error as though he had been dealing with daily clinical work among human patients. His precautions as to his sterile platinum loop, as to avoiding touching the lashes or margins when taking his "smear," and so on, were as strict as though a man's life depended upon them. His conclusions are therefore entitled to every respect. The results which he obtained are briefly thus:—

Horses.—Number of individual animals examined, fifteen. Pseudo-diphtheritic bacillus (? xerosis) was found ten times, streptococcus albus, twelve, aureus, six; pneumococcus, three; sarcina alba, two, and aurea, two. In each case the germs were few in number and appeared to have but low vitality, to be in fact saprophytic rather than pathogenic.

Cattle.—Number of animals examined, twenty-five. The xerosis bacillus was found fifteen times; staphylococcus albus, twenty-three,

aureus, eight, sulphureus, twice ; sarcina lutea, ten, alba, five ; pneumococcus, once. It will be noted that in the bovine conjunctiva sarcina is a vastly more frequent inhabitant than it is in the human.

Swine.—Number of animals examined, twenty. Staphylococcus albus was encountered eighteen times, aureus, six ; xerosis bacillus, fifteen ; sarcina aurea, six, alba, eight ; bacterium coli, five ; pneumococcus, five, etc. In swine and cattle the flora was decidedly rich, indeed in some smears the area was crowded with organisms, and in the cultures made the growth of various forms was abundant. In the swine some Gram-negative cocci were found which appear to be unique in ophthalmology ; the culture made from them had a vivid lemon-yellow colour. Certain Gram-positive bacilli also found showed themselves highly toxic to the rabbit, for when introduced into the anterior chamber they caused acute panophthalmitis.

Sheep and Goats.—Number of animals examined, twenty-five. The xerosis (pseudo-diphtheritic) bacillus was found eight times ; the staphylococcus albus, eighteen, aureus, once ; pneumococcus, twice ; and sarcina alba, twice. As a rule in these animals the tests gave but feeble growth of organisms.

Dogs.—Number of animals examined, ten. The xerosis bacillus was found twice ; staphylococcus albus, four times ; pneumococcus, twice ; and sarcina alba, twice. In dogs also the growths were weak, feeble, and uncertain.

It will be seen, then, to make a general survey, that it is rather that the frequency of various organisms is different from what is found in the human subject than that the actual flora differs in any essential manner, though a few organisms, as noted above, were found which rarely or never occur in the human conjunctiva, *e.g.* sarcinæ and the peculiar Gram-negative bacillus, whose culture showed a vivid yellow colour.

Optic Neuritis in Lower Animals.

Another recent paper, dealing with certain of the lower animals, which do not often figure in journals dealing with ophthalmology, is one describing certain cases of blindness coming on suddenly, and associated with optic neuritis, which occurred in young bulls (*Royal Lond. Ophthalmic Hosp. Rep.*, vol. xix. p. 1). Excluding some other cases which were more or less analogous to those first to be dealt with, there were five bulls, all more or less closely related by blood, which were all affected near the close of their first year. None of them showed any other symptom referable to the nervous system, unless the tendency to walk round and round in a circle be held to be so. In none of them was there any reason to suspect any injurious vegetable matter mixed with the food, unless there was in one case only a bare possibility. It will be remembered that veterinary surgeons are fully alive to cases of blindness attributable directly or indirectly to improper food.

In the first case among these bulls the blindness could be practically proved to have come on in two days: on the third day the animal, which had behaved quite normally up to then, refused to leave his stall, and evidently could not find his food by sight at all. When it was brought to him he ate it willingly and with gusto. The animal was after a few months killed in the usual way, and the brain carefully examined. He had never been used for breeding purposes. No possible source of lead poisoning was discovered (and indeed no symptoms except blindness were exhibited): the "patient" and the bull in the next stall, which was, and remained, in perfect health, had been fed and dealt with in exactly the same manner. The gist of the report upon the examination of the nervous system was to the effect that the papilla and immediately surrounding retina were markedly swollen and œdematous, with some little vacuolation of the deeper layers: the nervous tissue had undergone almost complete disorganisation, while the supporting tissue was increased in amount and showed increase of nuclei: the endothelium of the blood-vessels was considerably proliferated, and the walls thickened, and in them there was some leucocytic infiltration: but the choroid and the media appeared quite normal. There was no intracranial tumour and no meningitis. In some respects these pathological changes resemble much those found in poisoning by alcohol and by filix mas, and the whole aspect of the tissues as well as the behaviour of the animal suggests a toxic cause arriving by way of the blood-stream, but what that precise toxin may have been is quite uncertain. The other cases were very similar in regard to all essential points.

The Present Position of Ophthalmology.

This was the somewhat vague subject of discussion at the 1913 meeting of a congress which is being held annually nowadays at Oxford in summer (*The Ophthalmoscope*, September 1913). The speakers appear to have allowed themselves considerable latitude in their methods of dealing with it. Some of the remarks made by Doyne when opening the discussion are worthy of being taken to heart by not a few of the profession. For example he comments upon the complete *backwardness* which has taken place in reference to the wearing of glasses. Thus, not so many years ago they were worn, even by those who needed them badly and obviously, "on the sly," and many even had not the courage to "face the music" and wear them at all, but nowadays there is a tendency (Doyne does not put it so strongly) to wear "correcting" lenses too much. Further it is quite possible that a surgeon may be "righteous overmuch," and insist upon the correction being worn of a minute error in the eyes of such meticulous accuracy as to defeat his own ends. Thus a person between 40 and 50 may seek such a surgeon and say that he is not seeing to read as he used to

do, or as he would like still to do. In addition to presbyopia a very low degree of astigmatism is found, but it by no means follows that in every case this astigmatic error should be corrected; the man's trouble is due to failure of his accommodation as age goes on, and the astigmatism, such as it is, is not the real cause of his difficulty, perhaps is hardly even a contributing cause In such a case it is a question for a well-balanced and well-informed medical practitioner whether the cylinder is to be added or not. It is here, in such a case as that, that the mechanical optician (or for that matter the mechanical ophthalmic surgeon) and the sensible man part company. The former says: "Here is an optical instrument with a flaw in it undetected before; let me alone till I correct it"; the latter, before ordering a cylinder, stops to consider that the error has always been there, that vision is just as good and just as comfortable without a cylinder, and asks himself, "Must I correct this?" What has been said must not be taken to mean that in many cases of headache and so on the trouble does not really take its origin in the small permanent error; the point is that that may not be true in this particular case, and each case must be taken on its merits. Mr. Doyne's solution of the question of the capability of the medical profession to do the refraction-testing work rather than the opticians has taken the form of establishing a degree in the University of Oxford which may be taken by some who are, or who aspire to become, ophthalmic surgeons. We do not need to discuss whether or no this covers the ground; no one who aspires to such a position would be anything but the better of going through the course of instruction in various branches of work which is requisite for the obtaining of this degree. It would at all events eliminate from the ranks of the specialists such men as those spoken of recently by an American ophthalmic surgeon, one of whom showed how obviously impossible it was that mixed astigmatism could exist, for how can an eye be both myopic and hypermetropic at the same time? while another asserted that he had seen scores of cases of glioma of the retina occurring in the adult. But be the establishment of a new degree a good plan or a bad one, Mr. Doyne's remarks will at least have the effect of bringing out that what is required is not merely the detection of the presence of astigmatism, but the wisdom also which comes from constantly regarding such errors as errors in an organ rather than in a machine, and that organ as part of a human being rather than a mere isolated tool. W. G. S.

THERAPEUTICS.

UNDER THE CHARGE OF

JOHN EASON, M.D.

Chemotherapy.

A series of important observations have shown that von Behring was entirely wrong in stating, as he did in 1894, that the drug treatment of infectious diseases must be frustrated by the fact that bactericidal substances are more damaging to the tissue cells than to the invading microbes. So recently as 1906 Ehrlich and Bechhold stated the equally erroneous opinion that, in the investigation of the bactericidal action of substances, those alone which were able to inhibit the growth of bacteria or kill them in the test tube were worthy of consideration for therapeutic administration. It appears that we are indebted chiefly to Wolferston, Thomas, and Uhlenhuth for the present-day emancipation from such views, for to them belongs the credit of demonstrating the specific action of atoxyl against trypanosomes and spirochætes. Their observations clearly showed that when atoxyl was injected into the body of an animal infected with trypanosomes these disappeared completely from the blood in the course of a few hours, although the direct action of atoxyl on trypanosomes in the test tube was altogether insignificant. Whether atoxyl was or was not actively toxic for trypanosomes in the test-tube signified nothing as to its potency within the blood. Such observations may be said to have begun an epoch in chemotherapy.

The contrast in the activity of atoxyl in and outside the body suggested to Ferdinand Blumenthal* that there might be in the anilin bodies many slumbering antiseptic substances hitherto undiscovered, because, like atoxyl, they exhibited no direct bactericidal action *in vitro*, and were consequently deemed unworthy of experimental or clinical trial. Von Behring's and Ehrlich's doctrines were shattered, and a fresh beginning had to be made in the search for substances which might be capable of bactericidal action within the body. More recently Ferdinand Blumenthal (*Berl. klin. Woch.* 32, 1912) has expressed the opinion that every substance previously tested and thrown aside as useless must again be fully investigated. Some of the early fruits of the work prompted by this doctrinal upheaval concerned quinine and its derivatives. Jacoby, Morgenroth (*Therap. Monatsh.*, Feb. 1912) and several others showed that these had a bactericidal action on pneumococci within the body, although they possessed no bactericidal action in the test tube. It was also shown by Franz Blumenthal that within one and the same group of chemical bodies, viz., the mercurial compounds, the sublimate was highly toxic for spirochætes, *in vitro*, but was of little value for the treatment of experimental

* F. Blumenthal, *Biochem. Zeitsch.*, 1908, Bd. 16.

syphilis in rabbits, while the aromatic compounds of mercury were absolutely devoid of toxicity *in vitro*, but had powerful therapeutic activities.

We are now also beginning to realise that animal experiments are not always completely trustworthy in determining the therapeutic value of a bactericidal substance. One that is toxic for a definite micro-organism in the rabbit may have no such action when employed clinically, and the converse is specially true because of the virulence of infectious diseases in animals. Thus Neisser and others have shown that those mercurial compounds which are very toxic for spirochætes in man produce much less effect in animals than the arsenical compounds. Other instances of this kind might be quoted, and it is so striking with regard to mercurial compounds as to be extremely doubtful whether these would ever have been employed in the treatment of human syphilis if reliance had been placed on the results obtainable on animal experimentation alone.

The toxicity of salicyl preparations towards streptococci has also failed to stand the test of animal experiments, and it is therefore obvious in considering the possible therapeutic application of chemical substances for infectious diseases that we must not be too strictly guided by the results obtained experimentally. There are thus many difficulties encountered by those engaged in the search for specifics. Now that the value of animal experimentation is more thoroughly understood than ever before, further advances in chemotherapy would appear to depend very much on the work of the highly-trained chemist intimately co-operating with the highly-trained clinician. Hitherto negative results obtained in animal experimentation have conferred an unjustified distrust on the therapeutic value of some substances prized by the clinician, and positive results have likewise been unjustifiable. Regarded as proof of therapeutic reliability animal experimentation, however, cannot be wholly dispensed with. The relation of chemical substances to the individual organ tissues must first be worked out in animals before these can be studied clinically, and it has to be borne in mind that in the majority of therapeutic experiments there is a sufficient harmony between the results obtained in animals and in man. The chief conclusion drawn by Blumenthal is that one has to guard not only against placing too great faith in the positive bactericidal action of drugs shown by animal experiments, but also to realise equally that negative results so obtained do not necessarily mean that the substance is inert to bacteria in human blood.

The explanation of the discordant results can only be understood by recognising the nature of the action of chemical substances on micro-organisms.

Two modes of action have hitherto been distinguished: they

either (1) kill the microbes directly, or (2) lead the way to recovery by *mobilising* general and specific protecting bodies. If the action of a definite chemical substance varies in different individuals it is somewhat difficult to assume that the action on the micro-organism is a direct one, although this possibility is not entirely excluded. Investigations on immunity have shown that complement is of great importance for the activity of bactericidal serums, that is, the complement existing in the animal at the time of the injection plays a very important rôle. But disregarding the possibility that a substance of the nature of complement is necessary for the direct action of a bactericidal agent, it appears to Blumenthal that the direct action of chemical substances at present known to us is in most cases impossible without the help of the organism in some manner. Of the chemical substances that have thus far been sufficiently studied it seems that only the aromatic arsenical compounds possess a direct annihilating action on bacteria within the body, otherwise it would be impossible to explain the entire disappearance of trypanosomes from the blood a few hours after the injection of atoxyl into an animal whose blood previously swarmed with them. The activity of atoxyl has been shown to be scarcely less rapid on the spirochæte of recurrent fever (P. Ehrlich) and of syphilis in rabbits (Uhlenhuth, Ehrlich).

But even in the case of these aromatic arsenic compounds it is probable that there is also an indirect action, as Uhlenhuth, Friedberger, and Agazzi have shown. The latter two observers have shown that agglutinins increase after the injection of atoxyl and salvarsan, and Böhnke * has established the fact that in animals previously treated with diphtheria toxin the formation of antibodies increases greatly when salvarsan is administered. He has also found that in animals infected with meningococcus the amount of bactericidal bodies increases about 17 times more than in animals not previously treated with salvarsan. Thus the introduction of aromatic arsenical compounds stimulates the production of the protective substances of the body in a marked degree. In addition to the apparent direct bactericidal action possessed by them there is also the indirect one. On the other hand the bactericidal action of mercurial compounds and probably that of silver is chiefly indirect.

Subcutaneous injection of the most active mercurial preparations causes the disappearance of the spirochæte pallida from the primary syphilitic lesion of a rabbit only after two or three days, and the lesion still swarms with spirochætes when the largest proportion of the mercury has again been excreted. All mercurial compounds thus far examined have a like slowness in action which precludes the possibility of this being a direct one. According to Blumenthal the liver appears to play an important part in the action of mercury. He believes that

* *Deutsche Med. Wochensch.*, June 1912.

this is secondary to the mobilisation in the liver of protective substances which form with the mercury the specific mercurial combination.

In these views he is supported by Schrauth and Schöller. In further support of his views Blumenthal adduces the fact that all mercurial combinations hitherto found active in the treatment of syphilis are fixed in the liver, while those which are not so fixed have no such therapeutic value. Accordingly, the efficient treatment of syphilis by mercury must depend on the efficiency of the liver reaction. The observations that have been made on silver suggest that its method of action is somewhat similar, viz., by the formation in the body of a specific silver compound. Rosenstein, Wolff-Eisner, and others have also proved that silver stimulates protection processes, as shown by hyperleucocytosis.

When the bactericidal action is an indirect one, as in the case of mercury and silver, it is not surprising that animal experiments frequently give results which do not harmonise with clinical experience. And this is equally true whether the indirect action is due to the formation of a specific combination of the metal or to the production of protective substances. Such processes will vary in different species of animals in rapidity and in degree, and these variations in response determine the effectiveness or ineffectiveness of the chemical substance employed.

With such indirectly acting substances similar variations, usually within narrower limits, will be found also in individuals of the same species. The capacity of the organism to react for the formation of healing substances is of vital importance. It is thus intelligible that in apparently analogous cases strikingly favourable and unfavourable results may be obtained, depending on the presence or absence of sufficient reaction. In the case of substances which act directly *reaction* plays no significant part. J. E.

NEW BOOKS.

The Psychoneuroses and their Treatment by Psychotherapy. By Professor J. Dejerine, Paris, and Dr. E. Gauckler. Translated by Smith Ely Jeliffe, M.D. Pp. 395. Philadelphia and London: J. B. Lippincott Co. 1913. Price 18s.

We are glad to see a translation into English of Dejerine and Gauckler's *Manifestations Fonctionelles des Psychonévroses: leur traitement par la Psychotherapie.* The theme of the work is that the psychoneuroses, by which are meant neurasthenia and hysteria, have a pathogeny which is wholly psychic, and which is dependent on an emotion or series of emotions that have overwhelmed the personality. The logical conclusion is come to that a disease with a psychic origin demands a psychic therapy. It may be pointed out at the out-

set that the authors reject the idea that the sexual emotions are the only ones that count.

The book is divided into three parts. In the first, which comprises more than half the volume, the myriad symptoms of which the neurasthenic may complain are described with a great wealth of clinical illustration, and are classified under the various systems of the body. The mechanism of the manner in which each symptom can arise from an emotional cause is very clearly explained. We are shown how any symptom can become, by wrong interpretation, an emotional factor in its turn, and so lead on to other symptoms, some of them only functional, while others may be actually of an organic though temporary nature. A simple example from the alimentary system will explain this more clearly. A man with a family dependent on him fears financial ruin. As he sits at his table and looks at his wife and children he cannot but brood over the distress which he imagines is about to overtake them. Naturally his appetite goes. Should he attempt to take food he is obliged to chew and chew it round his mouth, for his mouth is dry. Here we have a first functional failure in the alimentary system—failure of the salivary secretion. We know that in depression there is a similar failure, or at least poverty of the gastric secretion, and therefore if the man persists in eating it is quite likely that he will get indigestion. If this occurs repeatedly he will begin to study his food, and he will probably find that things like soup and soft puddings, which slip down easily, cause less discomfort than things which require much mastication. From this, two depressive factors will arise—one, that he will eat nothing without wondering whether he will digest it or not; this in itself means that he will not be able to eat at all without a depressing emotion (fear of dyspepsia) being introduced, a further cause of dyspepsia. The other factor will be relative emaciation—the organic though not permanent ill effect. In such a case, even if his affairs take a turn for the better, the two secondary phenomena above described may be sufficient to keep up the dyspeptic symptoms; and if this man consults a doctor, who does not take the original psychic cause into account, it is likely that every attempt at cure may only increase his trouble, because each medical order may only fix all the firmer his obsessions regarding this food and that. This is possibly the origin of the almost universal dyspepsia of most self-made millionaires, all of whom have had early struggles, followed by physical treatments when they became well enough off to go the round of the Spas. At the beginning their psychism should have been turned away from their bodies and towards their duties.

It can be easily understood how other phenomena like insomnia, fatigue, failure of concentration, etc., could come to complicate such a case.

The second part of the book deals with the authors' conception of

the nature of the psychoneuroses. The various organic theories, which resolve themselves into those of exhaustion and of intoxication, are examined and rejected, and neurasthenia is defined as the ensemble of phenomena which result from the non-adaptation of the individual to any continued emotional cause, and from the struggle of this individual to bring about such an adaptation. Hysteria is regarded as the phenomena produced by the dissociation of the personality, due to emotion.

The *rôle* of emotion as the sole pathogenic factor of these neuroses is insisted on; a detailed description of how they arise from emotion is given.

In this portion also there is a chapter devoted to the differential diagnosis of these two conditions from (*a*) organic diseases; (*b*) other neuroses, such as psychasthenia, hypochondriasis, certain conditions of ill health of adolescence and of the menopause, and the milder psychoses, all of which are frequently confused with neurasthenia and hysteria, but which do not have an emotional pathogeny nor are amenable to the same treatment.

The third part is devoted to treatment. The various chemical treatments are described and denounced. A number of psychical treatments, such as hypnosis and suggestion, are discussed and rejected because they are addressed to the subconscious and not to the conscious personality, and therefore they cannot be regarded as attempts to build up the moral condition, which has in all cases become deplorable.

The authors' method of persuasion is then described in detail. Briefly, this consists, first, in obtaining a full history of the patient's symptoms, how they arose, what course they followed, what made them better, what worse. Then his emotional history is entered into fully, and the patient's mind is pushed gradually back to the beginning of things until everything is laid bare. This investigation must be complete and absolute. If it is not made it will not be possible for the physician to know where the patient is morally lacking, and therefore where he needs moral reinforcement. If enough time and care have been taken in investigating the physical symptoms the patient will have acquired sufficient confidence to confess all his sorrows and difficulties, and if the history is steadily pushed back, the forgotten things will gradually be remembered by the patient, and nothing will be lost. After this has been done an equally complete physical examination should be made, and a truthful report given to the patient of its result—not telling him how many grammes of phosphoric acid he excretes daily, but telling him truly if he has heart disease or phthisis, or anything of the kind that his physician really understands and that he himself can be made to. If no organic disease is found he should then be promised an absolute cure; if some organic

disease is found he should be promised the relief of all the symptoms which do not depend on it. Next, the lost ideals, the forgotten duties and interests of life, must be put before the patient, and he must be assured of the possibility of his again being able to take his place. Later the mechanisms of how he fell ill must be explained clearly. While this psychotherapy is being practised the physical parts of the treatment can be simultaneously attended to. The asthenic symptoms can be treated by rest, re-education, or whatever is indicated, the emaciation by overfeeding, and so on. In most severe cases isolation will be of the utmost value, because of its potent help in breaking down the old routines. In the milder cases it will not be needed.

The present writer has been practising this method for nearly two years, and he has conceived a very high regard for its value. The necessary investigations demand time and patience, but the trouble involved has been amply repaid. In the majority of cases the emotional factor has not been a sexual one. There can be no doubt that the fear of lighting on some horror has deterred many doctors from making a psycho-analysis; but while most patients have something distressing to tell, few have anything shameful. And if the confession has been obtained in the direct method described above, it is less objectionable than when indirect methods have been used to read a patient's thoughts when he did not know that he was being spied upon. Most doctors in general practice would do well to read this book, for while major neurasthenia may not be very common, the same cannot be said of the minor forms of the disease, which probably form the larger portion of any practitioner's daily work.

The translation is decidedly unequal. Very clumsy English sentences are common, and only too often the sense of the French has been wholly missed. Frequently this is due to obvious slips, as "medicaments" translated as "food," "un peu plus de temps" as "a shorter time": but more serious errors than these are often found. Thus in the examination of neuropaths the physician is advised to take notes of all the patient says, as he will sooner or later contradict himself: "Elles (the notes) vous serviront souvent à acculer un malade à ses propres contradictions, et l'on s'imagine difficilement combien souvent est perentoire l'argument qui commence par: 'Mais vous m'avez dit il y a quelque jours que.' . . ." This is rendered: "They will serve to convince the patient of his own contradictions, and it is hard to realise how often it is necessary to reply to an argument which is just beginning with 'But you told me that several days ago.'" Again the advice is given not to be in too great a hurry to launch forth with your own theories of the case: "Vous couririez trop le risque de tomber à faux et d'entamer la confiance et non pas les convictions du malade." "You will run too much risk of making a mistake, and of calling forth the confidence but not the convictions of your patient."

These instances could be multiplied many times. The acme of absurdity is reached in the story of a man with sexual impotence who went from one professional prostitute to another to see whether his sexual organs could be made to work or not. Dr. Jeliffe, however, says that he went from one *con*fessional to another, and that he thereby ran unnecessary risks.

Finally, it is difficult to see why a short but vigorous denunciation of Freud's method should have been wholly omitted from this translation. Are we now at the stage when Freud may not be criticised but only worshipped?

A Text-Book on Gonorrhœa and its Complications. By Dr. GEORGES LUYS, late Assistant to the Urological Clinique, Hôpital Lariboisière, Paris; Prizeman of the Faculté de Medicine, Paris. Translated and Edited by ARTHUR FOERSTER, M.R.C.S., L.R.C.P.(Lond.), late Resident Medical Officer, London Lock Hospital. Pp. 384. With 200 Illustrations and 3 Coloured Plates. London: Baillière, Tindall & Cox. 1913. Price 15s. net.

THIS is an excellent book, clear, comprehensive, well-arranged, and interesting, and that it has had a well-deserved success is proved by the fact that a second edition has been required within a year of its first appearance. The translation is well done, and much of that crispness in description and lightness of touch has been preserved which renders French medical literature such a pleasure to read, and forms such a contrast to the dull solidity and redundancy of German text-books. Though full and complete, comprising as it does the history, etiology, anatomy of the parts concerned, diagnosis, differential and otherwise, symptomatology, complications, and treatment of gonorrhœa in both sexes, one's interest never flags. The details are to the point, and there are no arid wastes of dull padding.

The plates and coloured illustrations are clear and beautifully executed, while the printing and general get-up of the English edition reflect credit on the publishers.

That everyone will agree with all the opinions of the author is not perhaps to be expected—for example, that the membranous urethra is one of the two most frequent sites of organic stricture resulting from gonorrhœa, is certainly not the usual experience of British observers.

That the book will prove as useful as might have been desired for the ordinary practitioner is perhaps doubtful; but then one must remember, that it is not a mere manual for the diagnosis and treatment of ordinary cases, but a complete text-book embodying all that is known of modern views and methods, and as such more suited for the specialist or one who desires to go deeply into the subject.

As an example we may refer to the chapter on Urethroscopy, which

is very fully dealt with, and the necessity for which is strongly emphasised. Unfortunately we have not had the opportunity of testing Dr. Georges Luy's urethroscope, and it may possibly allow one to observe the walls of the urethra as clearly as they are depicted in the beautifully coloured illustrations, each the size of a crown piece; but for the ordinary observer, without special training and with the urethroscopes with which one is generally acquainted, the results are not generally so satisfactory.

The last two chapters, devoted to treatment, are specially full and interesting. Those pages, however, which deal with the prophylaxis against gonorrhœa come rather as a shock to our insular susceptibilities. No British text-book with which we are acquainted goes into such details as to how one can take precautions to avoid acquiring gonorrhœa. Even the translator seems to have felt that a certain reticence might be advisable, as he mentions in a footnote that the original gives a fuller description of the various methods recommended, but that he doubts the wisdom of advertising pharmaceutical articles of doubtful value. The details of the varied methods of modern treatment are clearly stated, but are so numerous that even though the individual preferences of the author are indicated, it becomes a little difficult to judge of their comparative efficacy, and one cannot but feel that some of them would present difficulties in private practice. No doubt many of the older methods left much to be desired, but in any case they did not proclaim the exact nature of the malady from the housetop, and we cannot but fear that the advent of a supposed innocent youth in the parental residence, armed with a large douche can and a bottle of Condy's fluid, might raise justifiable suspicion and lead to unpleasantness in a previously happy home.

As regards gleet, also, every one of any experience must sadly confess that the results are often unsatisfactory, so much so that one can thoroughly sympathise with Ricord, who felt convinced that his particular Hades would be to be confronted and reproached by the shades of former patients whom he had failed to cure: but still one cannot but doubt if the extensive armamentarium and elaborate methods recommended in this volume are practicable, unless in the hands of a specialist, or are needful except in special cases, more especially as even the author admits that in a large proportion of cases systematic dilatation with large bougies, combined with some form of intraurethral medication and general treatment, leads to a satisfactory result. At the same time, if one takes the book for what it professes to be—a modern and comprehensive text-book on gonorrhœa in all its aspects—one cannot but feel that no better work could be desired by anyone who wishes to study the subject thoroughly.

Gonorrhœa in Women. By CHARLES C. NORRIS, M.D., Instructor in Gynecology, University of Pennsylvania. With an Introduction by JOHN G. CLARK, M.D., Professor of Gynecology, University of Pennsylvania. Pp. 521. With 43 Illustrations. Philadelphia and London: W. B. Saunders Co. 1913. Price 25s. net.

DR. NORRIS has succeeded in writing a very interesting and complete treatise on gonorrhœa in women. In studying this special disease, treated in such an exhaustive way, one is struck with the fact of the comparatively slow progress we have made in some ways socially through all the centuries, compared with the extraordinary progress in medical science, especially in later years, in the departments of pathology, diagnosis, and treatment. The names of Noeggerath and Neisser are pre-eminently associated with our increased knowledge of gonorrhœa and its ravages, and in one of the most interesting chapters dealing with the historic aspects of the question the author brings this clearly out, and shows well how the work of the one was so fully amplified and corroborated by the other. The bacteriology of the subject is clearly described, also the culture and staining methods, as well as the pathological changes which may follow on infection.

In the chapter on Sociology valuable statistics are given showing the serious effects produced by the disease on the individual and through the individual on society at large. The question of suppression and limitation is judicially dealt with, and it is conclusively shown that legal measures are and can be but futile means of doing much good. The author says: "There can be no doubt in the minds of all thinking persons that of all means of dealing with this difficult and urgent problem education offers the best, broadest, and most hopeful means of securing eventual success."

The chapter on Prophylaxis is an excellent one. Dr. Norris condemns the prevailing secrecy in regard to venereal diseases, and urges that they should be made notifiable, and treated like other contagious diseases which threaten the welfare of the general public.

The various operative methods of treatment are described, and special attention is directed to "the necessity for instituting conservative medical treatment before surgical intervention is undertaken."

The relationship of gonorrhœa to pregnancy, parturition, and the puerperium receives the attention which its importance deserves, and gonorrhœal therapy is instructively dealt with in the final chapter.

A few printer's errors call for notice, *e.g.*, Celsus described *urethral*, not ureteral, ulcers (p. 18); John Hunter was never knighted, though he deserved every honour (p. 26); and on page 250 the *steam*, and not the stream, within the uterine cavity requires controlling.

We can cordially recommend this well-written book. It deals wisely with a complicated and most important subject, and, as Professor

Clark truly says in the introduction, "Because of the broad and comprehensive character of the book it will be of great value to the physician, the surgeon, the specialist, the legislator, and the sociologist."

Sex Antagonism. By WALTER HEAPE, F.R.S. Pp. 217. London: Constable & Co., Ltd. 1913. Price 7s. 6d. net.

THOSE who are least disposed to regard the feminist movement too seriously, who see in it neither the herald of a golden age nor a menace threatening man's upward progress, will be the first to agree that as a social phenomenon it is of sufficient importance to call for dispassionate investigation. Even scientific authors, however, have been known to lose their heads, not to speak of their tempers, in discussing the question, and some who have written from a medical or biological standpoint have been no whit behind the rest in partisanship and special pleading. Mr Heape's book, however, is a brilliant exception. He writes dispassionately, and although the conclusions he draws may be unacceptable to the friends of the modern women's movement, they are not stated in such a way as to excite resentment. A biologist of Mr. Heape's reputation has every claim to be heard on an important question of this kind, and we therefore regret all the more that so much of his book is a polemic against Dr. J. G. Frazer's hypotheses of the origin of totemism and exogamy. Sex is, of course, at the root of the feminist movement, and the primitive sexual relationships connoted by totemism and exogamy, inasmuch as they illuminate the origin and nature of sexual repulsion and attraction, and display the evolution of the barriers which hedge the intercourse of the sexes, are legitimate subjects of inquiry in reference to sex antagonism. Mr. Heape, however, devotes the greater part of his space to controverting Dr. Frazer's ingenious hypotheses, sometimes with unnecessary asperity. He joins issue with Frazer both as to the origin of exogamy in an abhorrence of incest and as to the origin of totemism in ignorance of the connection between sexual intercourse and child-bearing. While we admit that he makes out a fair case against the former hypothesis, we do not consider that his arguments against the latter are strong: in this and other of his criticisms he has not, we think, guarded against the error (which besets those who have not had a training in anthropology) of interpreting primitive psychology in terms of that of civilised man. Apart, however, from the merits of the controversy, the method adopted is to be regretted because it has greatly obscured Mr. Heape's argument. He would have gained in lucidity had he merely stated his own opinion and the line of reasoning that led to it, without employing so controversial a tone. Even with a fair knowledge of Frazer's work on totemism it is sufficiently difficult to follow Mr. Heape, and it is likely that those who are unfamiliar with the subject

will often be bewildered. It is doubly unfortunate that Mr. Heape should have planned his work thus, because when he leaves Dr. Frazer's theories and tackles the biological aspects of woman's social position he is at once illuminating and sympathetic. He might have appealed to a wider circle of readers had it not been that, to follow his argument intelligently and with an open mind, some previous knowledge of Dr. Frazer's great work is essential.

Gastro-Intestinal Tract. By Dr. Carl Wegele; M. H. Gross, M.D.; and I. W. Held, M.D. Pp. xvi. + 329. With 54 Illustrations. London: Rebman, Ltd. Price 12s. 6d. net.

In this book Dr. Gross and Dr. Held give an adapted and abbreviated translation of Wegele's *Therapeutics of Diseases of the Stomach and Intestines* (*Therapie der Magen und Darm Erkrankungen*), with additions on the diagnosis of the diseases of the œsophagus and gastro-intestinal tract, the duodenal tube and its uses, and diseases of the pancreas. Many of the more important diagnostic methods applied in these diseases are described shortly, a special chapter being devoted to X-ray diagnosis and another to the duodenal tube and its uses, and the symptoms most frequently complained of are mentioned. Anyone who desires a short survey of these aspects of the subject may find this book of use, but it is too condensed and enters into too little discussion to be of much value as a book of reference or to those wishing to study gastro-intestinal diseases more thoroughly.

Dysenteries: Their Differentiation and Treatment. By Leonard Rogers, M.D., F.R.C.P., B.Sc., F.R.C.S., C.I.E., I.M.S. Pp. xi. + 336. With 15 Illustrations. London: Henry Frowde and Hodder & Stoughton. 1913. Price 10s. 6d. net.

Professor Rogers' aim in this book is to describe and differentiate between amœbic and bacillary dysentery, both clinically and pathologically, and to give indications for their treatment. There is a full account of tropical or amœbic hepatic abscess, and also a chapter on hill diarrhœa and psilosis. The author has had exceptionally favourable opportunities for investigating the subject of dysentery as physician to the Isolation Ward for Cholera and Dysentery in the Medical College Hospital at Calcutta, and has embodied the results of his observations and researches in the present work. In the chapter on the history of the evolution of our knowledge of dysenteries much information is brought together in a compact and handy form, and the same may be said of the review of the remedies and methods of treatment that have from time to time obtained in this disease. Dr. Rogers emphasises the diagnostic and prognostic value of the blood changes in dysenteries. The degree of leucocytosis is, in his experience, of such signal value that he, as a matter of routine, takes a blood count on admission of

all dysentery patients. In amœbic dysentery the increase of white corpuscles is very striking. Thus over 30,000 per c.mm. were noted, while in none of the author's non-amœbic cases did the number exceed 15,000. These observations are of very material assistance in the early recognition of the serious class of amœbic colitis comprised under fulminant or gangrenous dysentery, in which early recognition and treatment are of the utmost importance. If a very high degree of leucocytosis (25,000 to 50,000 or more white corpuscles per c.mm.) is found the author loses no time in commencing active specific treatment. This consists in the hypodermic use of the soluble salts of emetine, the rapid specific action of which, in amœbic dysentery, has been discovered by Dr. Rogers, and is fully described in these pages. The book is excellently printed, and has a capital index.

Text-Book of General Pathology. By a number of Contributors. Edited by M. S. Pembrey and J. Ritchie. Pp. 773. London: Edward Arnold. 1913. Price 18s. net.

This book is a compilation from the pens of a number of different authors, the various writers dealing with subjects which they have made their own. Thus the chapters on inflammation and infection are by Dr. Ainley Walker: the chapter on degeneration and necrosis by Professor Lorrain Smith; that on the nervous system by Drs. Mott and Sewell; that on respiration by Dr. J. S. Haldane.

It is impossible to deal adequately with the various parts of the book in the space of a short review. Let it suffice to say that the chapters on inflammation and infection are worthy of the author of the Gordon Lectures on Inflammation, which were published later in book form; and that on degeneration is what one would expect from the pen of one whose work on the subject is classical.

The chapter on tumours is a most excellent piece of work upon a most difficult subject. We are glad to see that the author refrains from indulging in an elaborate system of classification of new growths. As he puts it—"As the etiology of tumours is still unknown, the basis for a scientific classification is non-existent." The usefulness of this part of the book is, however, somewhat diminished by imperfect indexing. For example, endotheliomata are mentioned in several places throughout the chapter, but the only reference given under "endothelioma" in the index is to the chapter on the nervous system.

We note that in the preface the editors state that the work is intended for the advanced student. We are inclined to think that the average student, going up for his professional examination in pathology, will find the book rather strong meat. The book is essentially one to be consulted upon specific points, not one to be read through for examination purposes. As such, the work is at present unrivalled in the English language.

FOREIGN BOOKS.

1870-71, *Erinnerungen und Betrachtungen.* Von Professor Dr. Heinrich Fritsch. Pp. 318. Bonn: Marcus & Weber's Verlag. 1913.

Dr. Fritsch's recollections of his experiences as a surgeon in the Franco-German War make interesting reading. He commands a facile pen, and has the gift of graphic description, and although he treads a well-worn path it is none the less attractive to the reader who traces it in his company. Fritsch was attached to the army corps which besieged Metz; he was present at the action of Gravelotte; after Bazaine capitulated he was in charge of the hospitals at Saarlouis; he saw much guerilla warfare with franc-tireurs; contracted smallpox (rather to his relief, for he feared he was sickening with typhus); and did not return to Germany until peace was signed. These memoirs deal more with the little things than the great things of war: the hardships of march and bivouac, the camaraderie of camp and trenches, the demeanour of involuntary hosts on whom he was billeted, the characteristics of his enemies, are his theme rather than battles, strategy, or high politics. From his descriptions of the failures of transport and supply and the difficulties under which the medical service laboured the reader perceives that the Prussian armies of 1870 have had far to travel to become the perfect machines which the world admires to-day. The character of the writer peeps out from his memoir—a kindly, hardy citizen-soldier, going about his profession on the field without much thought of risk, and with no thought at all of being heroic, surmounting the difficulties of military surgery with common sense and good humour, and with wholesome human weaknesses for the pleasures of the table even in these tragic surroundings. He makes no attempt to conceal his contempt for the French, and disparages their patriotism as compared with that of his own countrymen. Even their national hymn was not inspiring—only melancholy. He has many anecdotes of his colleagues. The great surgeons of the day descended on him at Saarlouis—Gurlt, who insisted on probing every bullet-wound with his finger, and left behind him an epidemic of erysipelas; Wagner, who called his hospital "a great piggery," who was as selfish a surgeon as he was dexterous an operator, for every day Fritsch heard the promise, "To-morrow *you* shall operate and I will assist," but when to-morrow came Wagner took the knife himself. Fritsch also had as colleague an American surgeon who had served through the Civil War, "and lied about it miraculously." One may suspect, however, that Fritsch fell an easy victim, for he seems to have swallowed the hoary yarn concerning the American who, habituated to no fluid save whisky, spluttered out a glass of water given him by mistake, crying, "What on earth is that!" The author does not mind a story against himself. In discussion with an Alsatian he reproached the French for their use of black troops. The retort was, "Well, *you* employ *Bavarians*."

We are sure that Dr. Fritsch's book will be read with interest in this country, if only because it shows the German point of view, and that different nations have different ideas on humour, and disagree profoundly as to what is "not cricket."

Les Hystérotomies Vaginales en Obstétrique. By ANDRE WILHELM Pp. 234, with 10 full-page Plates. Paris: Amédée Legrand. 1913.

THIS thesis consists in the main of an exhaustive discussion on vaginal Cæsarean section. The history of the operation is considered. Its use is discussed in cancer of the gravid uterus, eclampsia, retroplacental hæmorrhage and placenta prævia, rigid cervix, and in other dangers to mother and child during labour. The author favours its use also as a means of inducing abortion and premature labour. The great usefulness of the operation is emphasised in cases where the uterus must be quickly emptied and where the cervix is unopened. The author considers it greatly superior to instrumental dilatation of the cervix in such cases. In this respect he comes into conflict with the orthodox French opinion, and in point of fact the main object of the work is to bring the merits of the operation before the obstetricians of his country. The technique is fully described, and is illustrated by ten beautiful plates.

Handbuch der Biochemie des Menschen und der Tiere. Ergänzungsband. Herausgegeben von Dr. phil. et med. C. OPPENHEIMER. Pp. 746. Jena: Gustav Fischer. 1913. Price 26 marks.

THIS supplementary volume—which itself has the dimensions of an ordinary text-book on biochemistry—deals mainly with those subjects in which a great deal of progress has been made since the appearance of the first four volumes (1908-1910), so that the treatment given to these subjects in the main work required extension. In a way, therefore, this volume represents an extensive review of recent work on certain selected subjects. Of these the following may be mentioned as being of special interest to readers of this *Journal*:—A chapter on anaphylaxis, by Seligmann; on the biochemistry of the skin, by Unna and Golodetz; on the mechanism of the gastric secretion, by Bickel; on recent advances in the physiology and pathology of digestion and absorption, by London; on the inter-relationship between the nervous system and the internally secreting glands, by Peritz; on fœtal hormones, by Wolff; on the metabolism of women during menstruation, pregnancy, the puerperium and lactation, by L. Zuntz; and on the biochemistry of radio-active substances, by Plesch.

As in the previous volumes, an almost complete bibliography is given in every chapter, and the work of the editor does not fall short of the high standard which he has set himself in this work.

NOTES ON BOOKS.

Applied Pathology in Diagnosis and Treatment, by Julius M. Bernstein, M.B., D.Ph., M.R.C.P. (Hodder & Stoughton), price 10s. 6d. This book is intended to afford the student and the practitioner a survey of the applications to practical medicine of the results of research in clinical pathology. The most successful sections deal with vaccine and serum therapy, the facts upon which these forms of treatment are based being clearly stated. A useful chapter describes the use of tuberculin in pulmonary tuberculosis. The book is not intended for laboratory workers, but can be recommended as giving an intelligible account of the methods employed by the clinical pathologist.

BOOKS RECEIVED.

ALIMENTARY Toxæmia: Its Sources, Consequences, and Treatment. A Discussion (*Longmans, Green & Co.*) 4s. 6d.

BERNHEIM, B. M. Surgery of the Vascular System . . . (*J. B. Lippincott Co.*) 12s. 6d.

BOAS, H. Die Wassermannsche Reaktion. Second Edition . . . (*Karger, Berlin*) Mk. 7.60.

CHEYNE, W. W., and F. F. BURGHARD. A Manual of Surgical Treatment. Vol. V. New Edition . . . . . (*Longmans, Green & Co.*) 21s.

COLOMBANI, L. Le Massage Théorique et Pratique . . . . (*A. Legrand, Paris*) 4 fr.

DANIELS, C. W. Tropical Medicine and Hygiene. Part I. Second Edition. (*Bale, Sons & Danielsson*) 7s. 6d.

GOODHART, J. F., and G. F. STILL. The Diseases of Children. Tenth Edition (*J. & A. Churchill*) 16s.

HARRIS, J. D. Lectures on Medical Electricity to Nurses . . . . (*H. K. Lewis*) 2s. 6d.

HURRY, J. B. The Ideals and Organisation of a Medical Society . . (*J. & A. Churchill*) 2s.

INTERNATIONAL Clinics. Vol. III. Twenty-third Series, 1913 . (*J. B. Lippincott Co.*) —

JAMIESON, E. B. A Companion to Manuals of Practical Anatomy (*Frowde, Hodder & Stoughton*) 6s

JOLLY, Ph. Kurzer Leitfaden der Psychiatrie . . . (*Marcus u. Weber's Verlag*) Mk. 4.

KNOTT, C. G. Physics. Third Edition . . . . . (*W. R. Chambers, Ltd.*) 7s. 6d.

M'DONAGH, J. E. R., and R. L. M. WALLIS. The Chemistry of the Leucocytozoon Syphilidis and of the Host's Protecting Cells . . . (*Cambridge University Press*) —

MACDONALD, D. M. The Practitioner's Practical Prescriber (*Frowde, Hodder & Stoughton*) 5s.

MEDICAL and Surgical Reports of the Episcopal Hospital, Philadelphia (*W. J. Dornan*) —

MELLIN'S Food, Limited, Calendar for 1914 . . . . . —

NICHOLSON, P. Blood-Pressure in General Practice . . . (*J. B. Lippincott Co.*) 6s.

PRACTICAL Medicine Series. Vol. VII. Obstetrics. . . . (*Year Book Publishers*) dol. 1.35.

RANKIN, W. The Elements of Bandaging and the Treatment of Fractures and Dislocations (*Frowde, Hodder & Stoughton*) 5s.

RUSSELL, H. The Flea . . . . . (*Cambridge University Press*) 1s.

STITT, E. R. Practical Bacteriology, Blood Work and Animal Parasitology. Third Edition (*H. K. Lewis*) 6s. 6d.

STRAUSS, H. Praktische Winke für die chlorarme Ernährung. Second Edition (*Karger, Berlin*) Mk. 1.50.

THE Cambridge Diary for the Academical Year 1913-1914 . (*Cambridge University Press*) 1s.

THE Cambridge Pocket Diary, 1913-1914 . . . . . (*Cambridge University Press*) 1s.

THE Tuberculosis Year Book and Sanatoria Annual. Vol. I. 1913-1914 (*Bale, Sons & Danielsson*) 7s. 6d.

THE "Wellcome" Photographic Exposure Record and Diary, 1914 (*Burroughs Wellcome & Co.*) 1s.

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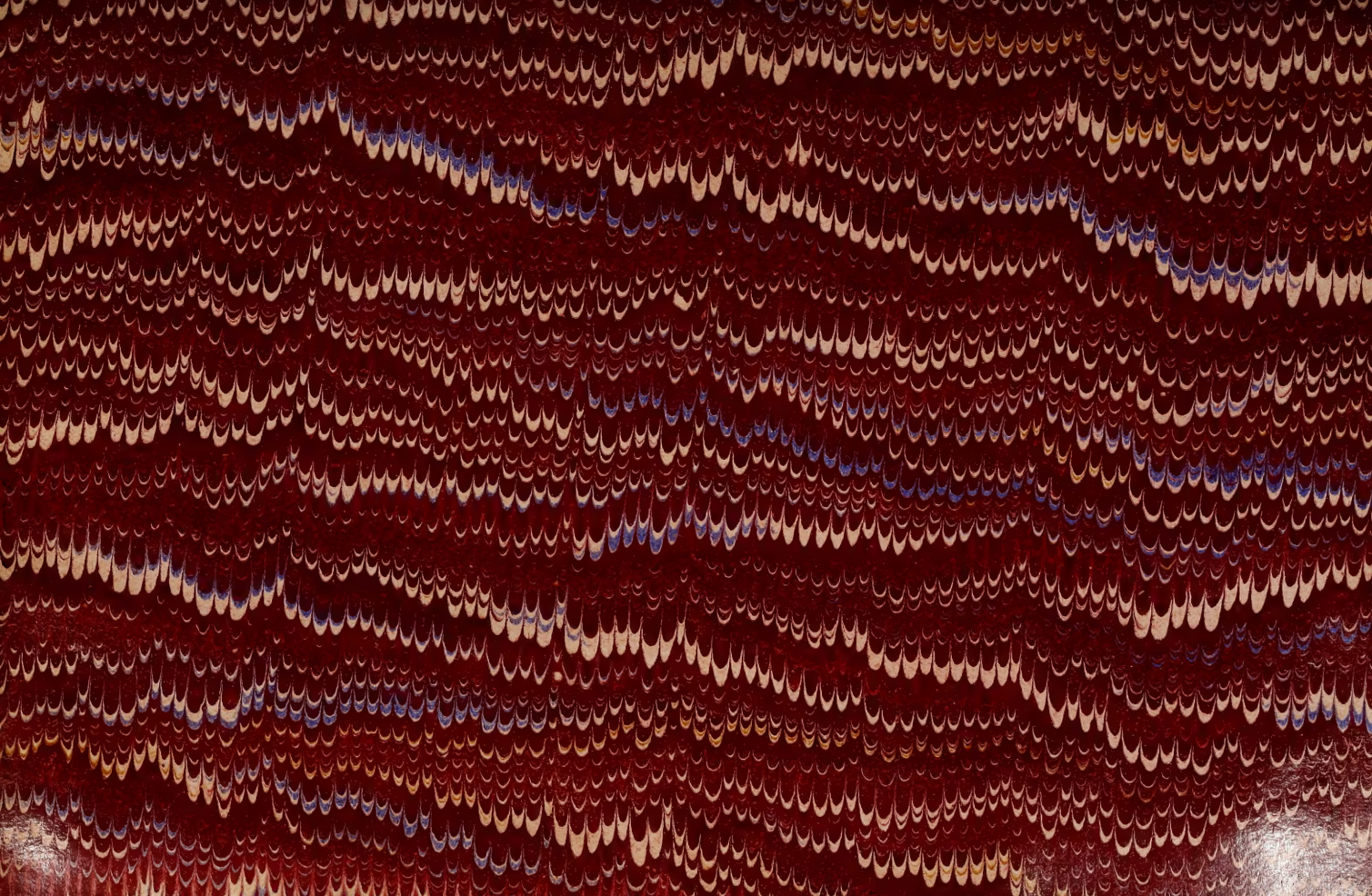

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